VALIDATION OF VARIOUS SCORING SYSTEMS IN DIAGNOSIS OF ACUTE APPENDICITIS

Dissertation submitted to

The Tamil Nadu Dr. M.G.R. Medical University

In partial fulfilment of the regulations for

The award of the degree of

M.S.GENERAL SURGERY [Branch- 1],

K.A.P.VISWANATHAM GOVERNMENT MEDICAL COLLEGE & M.G.M.GOVERNMENT HOSPITAL, TIRUCHIRAPALLI.

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CERTIFICATE BY THE GUIDE

This is to certify that the thesis entitled "**VALIDATION OF VARIOUS SCORING SYSTEMS IN DIAGNOSIS OF ACUTE APPENDICITIS"** submitted here with by **DR. R. RANJITH BABU** in partial fulfilment of the rules and regulations for the award of **M.S DEGREE** in **GENERAL SURGERY** is a bonafide record of the research work carried out by him under my guidance and supervision during his Post Graduate training.

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DECLARATION

I solemnly declare that the dissertation titled **"VALIDATION OF VARIOUS SCORING SYSTEMS IN DIAGNOSIS OF ACUTE APPENDICITIS"** is done by me at K.A.P.VISWANATHAM GOVT MEDICAL COLLEGE, TIRUCHIRAPALL under the guidance and supervision of **Prof. Dr. P.SHANTHINI M.S.D.G.O,** This dissertation is submitted to The Tamil Nadu Dr. M.G.R. Medical University towards the partial fulfillment of requirements for the award of M.S GENERAL SURGERY [Branch-I] .

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CONTENTS

INTRODUCTION

INTRODUCTION

Acute appendicitis is still one of the common diseases in surgical practice. If appendicitis manifests in its classical form it is easy to diagnose. But most of the time appendicitis does not have its classical presentation. So the diagnosis of atypical presentation is challenging. It is often missed and may lead to perforation and complication which increases the morbidity. Even though there is availability of number of imaging techniques, clinical signs and symptoms, laboratory investigations have the major role in diagnosis of appendicitis based on these. So many scoring systems has been developed to diagnose this condition early. The purpose of my study is to validate some of the scoring systems(Modified Alvardo, Ohmann score, Eskelinen score) in the diagnosis of appendicitis.

The word "appendicitis" refers to inflammation of appendix vermiformis. The literal meaning of appendix is an appendage – anything that is attached to a larger or major part as a tail or limb. The Latin word vermiform means a worm like structure. The appendix vermiformis is a maggot shaped tube arising from the caecal wall, 2cm or less beneath the end of the terminal ileum. Appendix is confined almost entirely to humans and higher primates, occasionally be absent in humans.

AIM OF THE STUDY

AIM OF THE STUDY

1) To do observational study of the various diagnostic scoring systems in the diagnosis of acute appendicitis.
2) To compare the sensitivity , specificity of

   Modified Alvarado scoring

   Ohmann scoring

   Eskielinen score

   To analyse these scoring systems with HPE findings as a gold standard
3) The purpose of my study is to do validation of these scoring systems to improve the accuracy of the diagnosis system.

REVIEW OF LITERATURE

HISTORICAL NOTE

The appendix was first noted in Egyptian civilization(3000 b.c) itself . Aristotle and Galen did not identify the appendix because they both dissected animals which do not have appendices. Celsus, however almost certainly exposed the appendix because he was allowed to cut up criminals.

Though the presence of the appendix has been know for centuries, the credit for its first description goes to the physician-anatomist, Berengario DaCapri, in the year 1521.The appendix was clearly depicted in anatomic drawings by Leonardo da Vinci, prepared in 1492 but not available until the 18th century, and was well illustrated in the AndreasVesalius work, "De Humani Corporis Fabrica," published in 1543.

EVOLUTION OF APPENDICITIS

The disease appendicitis has been known for centuries. Aretaeus in the second century A.D. described a case in which he drained an abscess of the right part of the abdomen near the liver. This might have been a description of an abscess arising from some other source. Jean Fernel, the great French Physician, described a case of perforated appendicitis in his Universa Medicina, which was published in 1554. He gave an account

of a seven- year old girl who had diarrhoea for several days and her grandmother gave her a large quince. It stopped her diarrhoea, but the girl began to have severe abdominal pain and eventually she died. At autopsy the "caecum intestine was narrow and constricted, also quince was found adherent to the inside and stopping of the lumen".

In 1711 Lorenz Heister, Professor of Surgery at Helmstadt discovered a case of appendicitis when he was called to dissect the body of a criminal who had been executed. In account he wrote later that as he was "about to demonstrate the situation of the great guts (he) found the vermiform process of the caecum preternaturally black, adhering closer to the peritoneum than usual."

William Ballonius, in his Consiliorum Medicinalium published in Geneva in 1734, gave the description of gangrenous appendicitis in the living patient, although he did not use this term.

Sir Zachary Cope in his book "A history of Acute Abdomen", has reported this. John Parkinson and Wegelar of England & Oliver Prescott of New England reported perforation of appendix in 1812.

However, J.B.Louyer-Villermay in 1824 emphasized the importance of the condition in his paper, “Observations of use in the inflammatory conditions of the caecal appendix presented in the Royal conservatory of Medicine in Paris.

Walcott Richard’s diagnosis of perforation of appendix, which he described as “ulceration of the appendix vermiformis” in 1838, was confirmed on autopsy.

During the nineteenth century, the caecum was considered the chief cause of trouble in the lower quadrant and the disease of the caecum and appendix was not differentiated. All the troubles of the right lower quadrant were termed under the term typhlitis, or inflammation of the caecum.

Husson and Dance in 1827, Goldbeck in 1830 and Dupuytren in 1835 developed the concept of inflammation arising in the cellular tissue surrounding the caecum. It was Goldbeck who confined the term “perityphlitis”.

Later J.F.H.Albers of Bonn described four varieties of typhlitis in 1837, influencing medical thought for 50 years.

Frederick Merling in the study of the pathologic anatomy of the appendix, published in 1838 reported that a foreign body has been found in the appendix and was thought to have caused gangrene. Since then much has been written about foreign bodies in the appendix and are blamed for perforations.

In 1965 R.E.Shaw reported that the stones found in the appendix are true calculi, not just faecoliths. He said that calculous appendicitis was more appropriate to gangrene and perforation.

Reginald Fitz of Boston gave his classical paper on appendix before the Association of American Physicians in 1863. His paper was based on an analysis of 257 cases of perforating ulcer of appendix and of 209 cases clinically diagnosed as typhlitis and perityphlitic abcess. The disease was found to be most common in young adults, especially males. A faecal concretion or foreign body was present in three-fifths of cases. He went on to discuss the origin of the term typhlitis, perityphlitis and paratyphlitis abscess and concluded that in vast majority of cases the primary cause was inflammation of the appendix. He preferred the term "appendicitis" to all others. He wrote "in most cases of typhlitis, the caecum is intact whilst the appendix is ulcerated and perforated."

Surgeons in the United States discarded the old term of typhlitis in the 1890's and after the 19th century the idea that the caecum was the cause of inflammations in the right lower quadrant was discarded and the appendix correctly considered to be the origin.

In1899 Charles McBurney of New York illustrated that "exact locality of the maximum tenderness, when one examines with the fingertips in adults, is one-half to two inches inside the right anterior spinous process of the ilium on the line drawn to the umbilicus. The accuracy of this sign (McBurney's point) I have demonstrated in every case operated upon by me since I first made the observation". This point corresponds to the base of the appendix and therefore does not move with the tip.

EVOLUTION OF APPENDICECTOMY

According to R.G.Richardson in "The Surgeons Tale", the first appendicectomy was performed at St.Georges Hospital, London, in 1726 by Claudius Amyand. The patient, a boy, had hernia and a faecal fistula.

Richardson reported:

"When he opened the scrotum he found the appendix in the unusual position and moreover, that the appendix was perforated by a pin. He removed the appendix and then dealt with the hernia and fistula".

Hancock in London successfully drained an appendix abscess in a female patient aged 30 years that was in her eighth month of pregnancy in 1848. After incising the peritoneum, fluid was drained and he made no search for the appendix.

Willard Parker, an American surgeon, started draining appendiceal abscesses since 1867. He did not remove the appendix and his technique is still used but the appendix is removed later on.

Lawson Tait, the great English surgeon, was the first to remove an inflamed appendix. He thought that his patient had a peritonitis resulting from perforation of caecum . However, intraoperatively, he found "a large abscess which extended deeply down towards the brim of the pelvis lying bare was the vermiform appendix which was black and discoloured and gangrenous". The patient made a perfect recovery following appendicectomy and drainage of the abscess.

Abraham Groves performed the first elective appendicectomy in Canada in 1883. His patient was a twelve- year old boy. The appendix was removed and the stump was cauterized with a heat probe heated over the flame of a lamp. The patient recovered. Early operation for appendicitis was widely promulgated by surgeons like John Deaver (1855-1931), Charles Mcburney (1845-1913) and Murphy of Chicago.

In 1894, McBurney described his incision for appendicectomy. Though he was the first to describe this incision, L.L.McArthur, who had used the incision in more than 60 cases had used it for a longer time. Later McBurney gave McArthur credit for using the incision first, but despite this, it is still known as the McBurney's incision.

Later others modified the incision like Rutherford Morison in 1896, A.E.Rockey in 1905, and G.G.Davis in 1906.

Noteworthy as these various dates are, it is doubtful whether any of these areas important in the history of the appendicectomy as 24th June 1902. The coronation of King Edward VII had been arranged to take place on 26thJune 1902, but the king fell ill with abdominal pain and fever only a few days before, on consultation with some of the most distinguished surgeons in the land, including Lord Lister, it was decided

that the only chance to save his life lay in urgent operation. Frederick Treves, who had performed his first successful appendicectomy in 1887, opened the abdomen and drained an appendix abscess on 24th June 1902. The king made a good recovery and the operation was entirely successful. After the postponed coronation on 9th august 1902, Treves received a knighthood and Lister was made a Privy Councillor and one of the 12 original members of the Order of Merit. When welcoming Lister to his Council, the king is supposed to have said, "I know that is it had not been for you and your work, I would not have been here today".

ANATOMY

Embryology

Only few mammals are having appendix.

In the alimentary tract of animals, appendix is not present in invertebrate. Among vertebrate it is absent in fish, reptiles, amphibians and birds. Other than few mammals. intact vermiform appendix recognized as a worm-like narrow extension. Monkeys do not have appendix.

The appendix is the part of caecum, which forms the distal end of caecal, it buds as a diverticulum formed from the mid-gut loop, distal part of the mid-gut loop forms appendix.

Rarely the caceum does not migrate during development. In that cases , it forms sub-hepatic appendix . In situs inverses totalis appendix may present in left illac fossa, causing diagnostic difficulty in appendicitis.

Few submucosal lymphoid follicles are present in birth, they increases upto 20 years, then it regresses. That is why the incidenceof appendicitis is more upto 20 years of age, then it decreases.

SURGICAL ANATOMY

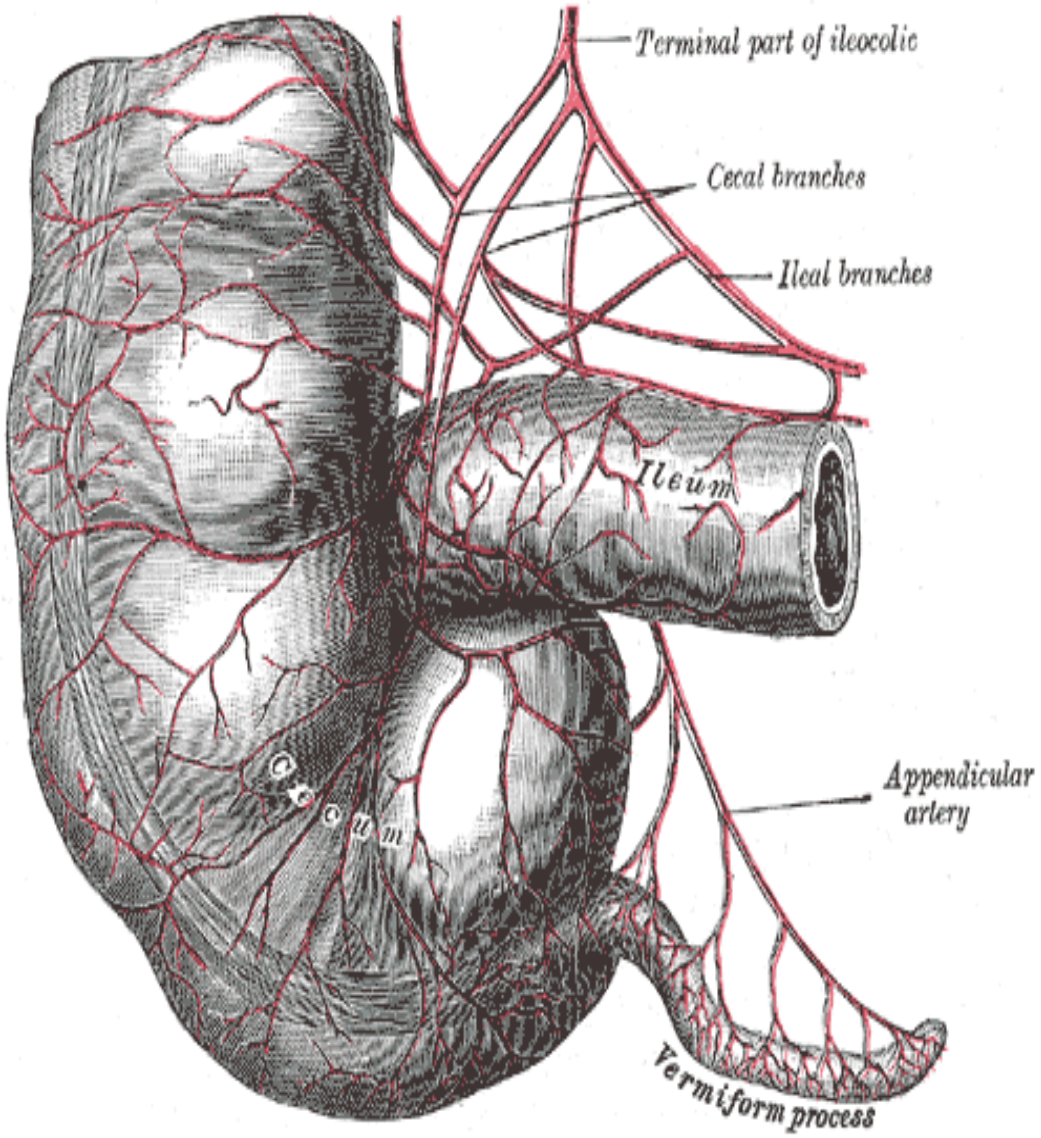
It is situated at the terminal end of the caecum where three taeniae join, about 2cm below the ileocaecal orifice.usually around 5-10 cm in size but can be of variable width measuring 3-8mm and the diameter of the lumen is 1-3mm.

The three taenia coli on the ascending colon and caecum meet on the base of the appendix. The anterior caecal taenia is typically discrete and can be traced to the appendix. It is a landmark to trace the appendix. Its length varies from 3cm to 18cm, with average length of 9cm. It may occupy one of the several positions, thus it may be retrocaecal, retrocolic, pelvic or descending over the pelvic brim, appendix related to the right fallopian tube and ovary.

Anatomy of Appendix

It has a mesoappendix with which it is attached to the ileal mesentery. The lumen of the appendix is small (admits a matchstick) and opens into the caecum and slightly posterior to the ileocaecal opening. The orifice is safeguarded by a semi lunar mucosal fold forming a valve.

BLOOD SUPPLY OF APPENDIX



Mesoappendix is extension of mesentry contains appendicular artery,a branch of ileocolic artery. Often an accessory artery may be present which is known as accessory appendicular artery of Seshachalam, thrombosis of this vessel leads to gangrenous appendicitis.

The appendix is drained by appendicular veins to the posterior caecal / ileocolic vein and then it drains into the superior mesenteric vein.

An inconsistent number of slender lymphatic channels pass through the mesoappendix to drain into the ileocolic nodes.

The appendix and overlying visceral peritoneum are innervated by sympathetic and parasympathetic nerves from the superior mesenteric plexus.

VARIATIONS OF DEVELOPMENT

In unmigrated caecum, appendix presents as subhepatic .In Situs inversus, appendix is present in the left ilac fossa,,which cause left ilac fossa pain and it is difficult to dignose.

CONGENITAL VARIATIONS

Congenital absence

J.O.Robinson(1952) reported 68 cases of congenital absence of appendix.

Duplication and triplication

In 1968, Tinkler reported on operating on a triple appendix in a Chinese boy aged 12 months with other congenital anomalies.

Wall bridge(1962) classified duplication of appendix as;

Type A

Partial duplication in a single caecum.

Type B:

Two separate appendices in a single caecum.

Type B1

Bud like 2 appendices symmetrically placed on either side of the ileo-caecal valve.

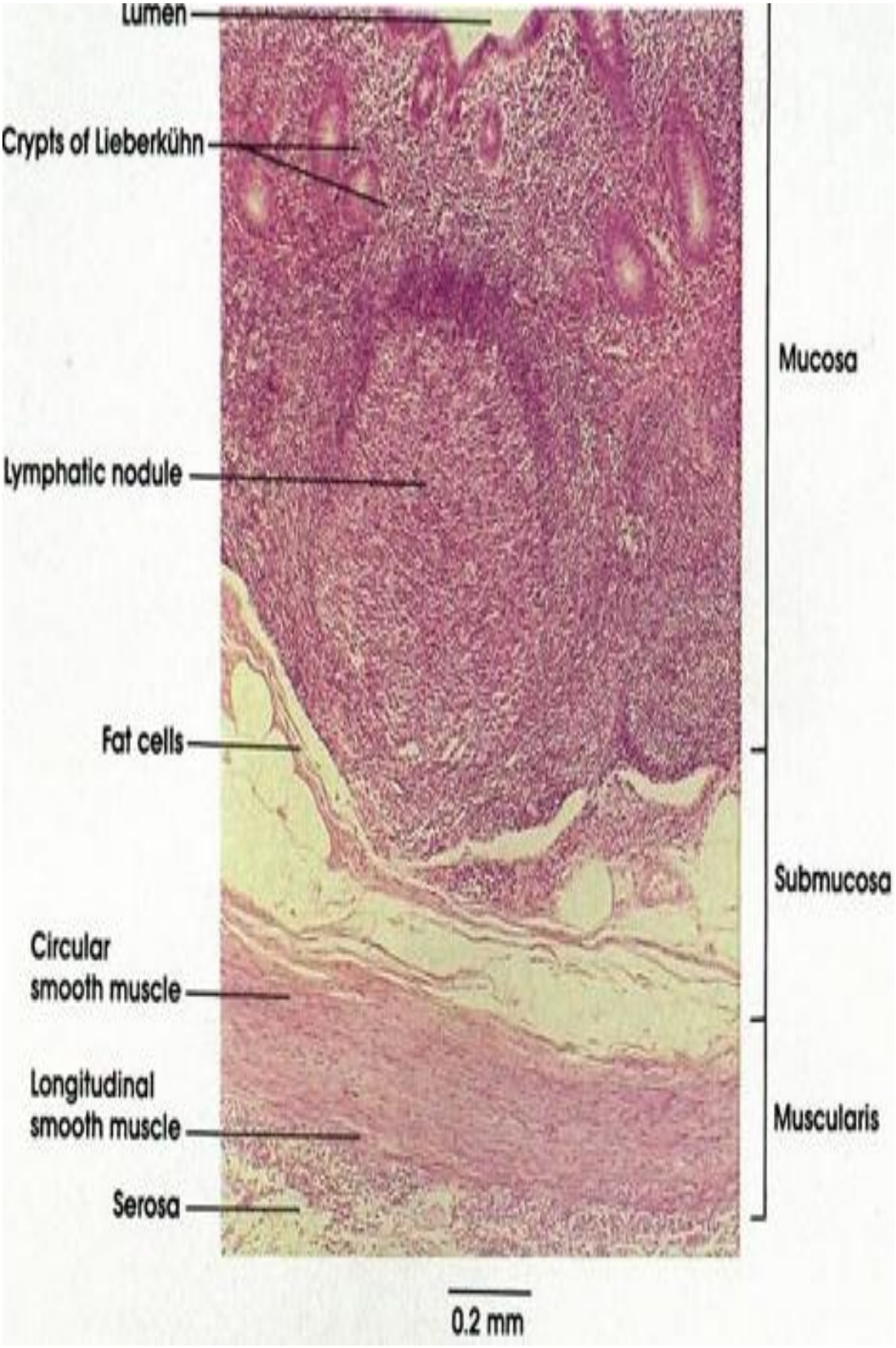
Type B2

'taenia colic' type –one appendix from the usual site,the other from the caecum above the lining of taenia at varying distance from the first.

TYPE C

A double caecum with each one having an appendix.

HISTOLOGY


Lumen
Crypts of Lieberkühn
Lymphatic nodule
Fat cells
Circular smooth muscle
Longitudinal smooth muscle
Serosa
Mucosa
Submucosa
Muscularis
0.2 mm

Histologically

Simiar to large intestine, the serosa is the outer covering except, along the mesenteric attachment. The muscular layer consists of longitudinal and circular muscles. The submucosa contains many lymphoid masses. The mucosa is enclosed by columnar epithelium and attenuated ‘M’ cells. The submucosal lymphoid follicles are organized like those of other examples of gut-associated lymphoid tissue and have been considered the part of the mucosa- associated lymphoid tissue (MALT).

FUNCTION

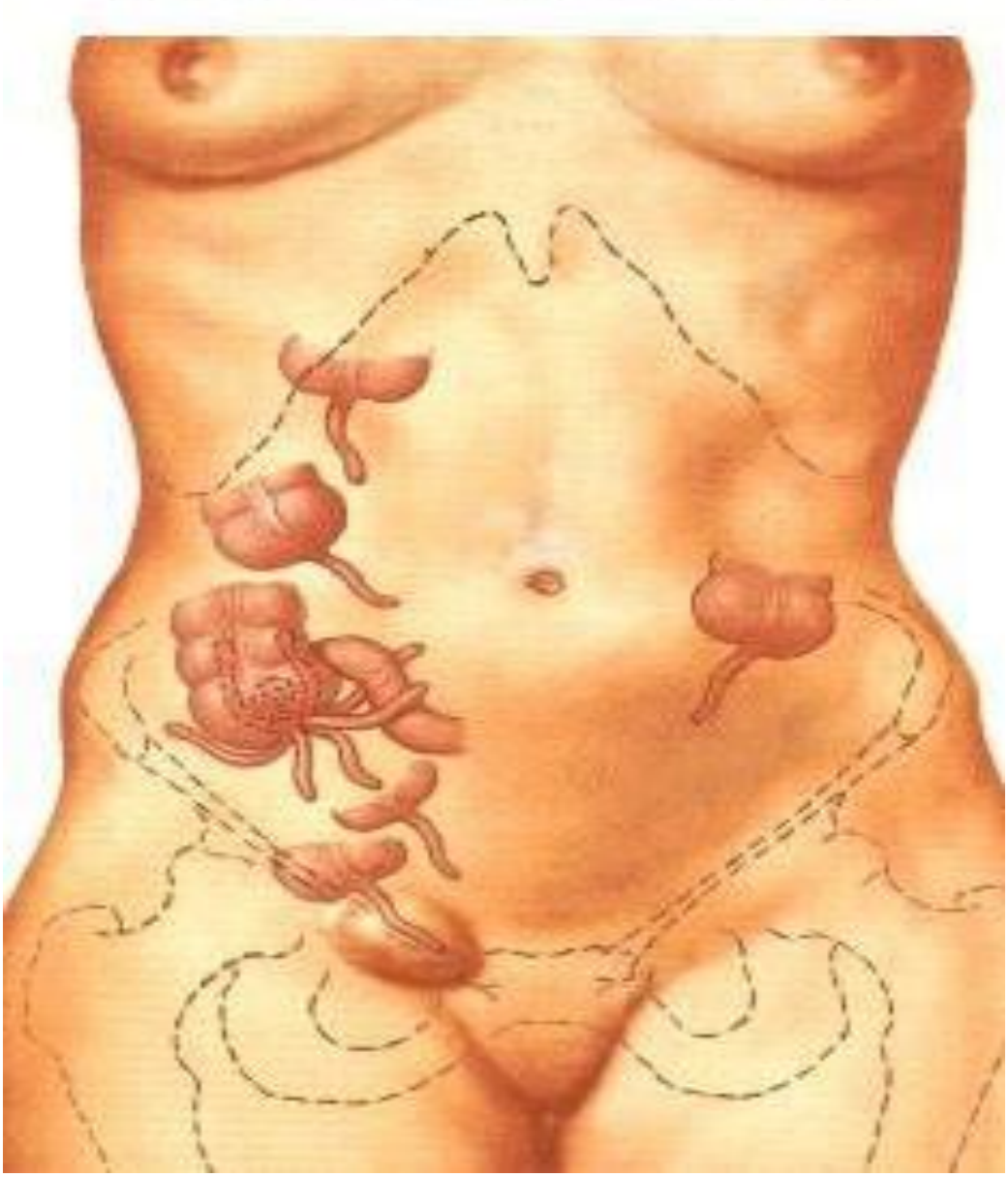
Though the physiological role of the appendix is unproved and immunologic function is suggested by its content of lymphoid tissue. Nevertheless, it is an useful organ for surgeons as it can be used for on table lavage of large bowel. It can also be used as a conduit for permanent continent urinary diversion.

POSITION

The position of the appendix can be anywhere along the arc with the centre at the base of the caecum. It is the only organ in the body that has no constant anatomical position, in fact, its only constant feature is its mode of origin from the ceacum. The various positions of the

appendix are: paracolic, retrocolic, preileal, postileal, promontoric, pelvis and subcaecal. The appendix may be situated in the left lower quadrant of the abdomen in cases of transposition of viscera. The retrocaecal position is the most common position.

Variation in position in appendix



Wakeley (1933), in an analysis of 10,000 cases at post-mortem gives the position of the appendix as follows:

- retrocaecal 66%,
- pelvis 30%,
- subcaecal 3%,
- preileal 1%
- right paracolic and postileal 0.4%.

ACUTE APPENDICITIS

Incidence

Acute appendicitis is one of the most frequent causes of the acute surgical abdominal pain .But as the disease is not notifiable, its exact incidence is not known.. In the past 30 years the incidence has fallen dramatically , such that the individual lifetime risk of appendicectomy is 8.6% and 6.7% among males and females respectively

AETIOLOGY

Appendicitis has shown an association with western diet habits, it is more common among animal protein eating white races. It is also believed that there is a familial tendency in this disease that could be explained to be due to an inherited malformation of the organ.

Anderson & colleagues compared 29 children between the ages of 5 and 15 years suffering from appendicitis with 29 controls. Twenty in the study group compared with four in the controls gave a history of appendicitis in parents and siblings. However, family history of appendicitis has no diagnostic value.

- Young males.
- White races.
- Taking low fibre diet. Fibre rich diet prevents appendicitis.
- Common in May and August. (epidemic appendicitis).
- Viral infection.
- Family history,30% more prevalent in a person with positive family history.
- Obstruction of the lumen caused by fecoliths, stricture, foreign body, round worms, or thread worms, adhesions and kinking.
- Carcinoma of caecum near the base, ileocecal Crohn's disease.
- Distal colonic obstruction.
- Abuse of purgatives.

Among this faecolith is the most common cause for appendicitis.

PATHOLOGY

Acute appendicitis is thought to arise from infection superimposed on luminal obstruction. The lumen of the appendix becomes obstructed by hyperplasia of submucous lymphoid follicles, faecolith, stricture, tumor, or any other pathological condition.

After perforation localisation by greater omentum and dilatation of ileum occurs with suppuration and pus is formed inside causing appendicular abscess.

Localisation by omentum and dilated ileum without pus formation causing appendicular mass.

Acute appendicitis with blockage at the opening of the lumen cause mucous retention within the appendicular lumen leads to mucocele of the appendix.

BACTERIOLOGY

According to a study by Pieper and colleagues of the bacteriology of 50 inflammed appendices, both aerobic and anaerobic bacteria were isolated in all patients. Anaerobic isolates were more than aerobic.

E-Coli were the most common aerobic bacterium . Other gram negative aerobes like Klebsiella, and Proteus and Pseudomonas were isolated in ten patients.

Enterococci were found in 15 patients and Streptococci in 21 patents. Among the anaerobes, the most common was Bacteroides fragilis. Next in frequency were gram positive cocci. Clostridium perfingeus was isolated from 9 patients.

Pseudoappendicitis is appendicitis due to acute ileitis caused by Yersinia infection. It is commonly occurs in Crohn's disease.

PATHLOGICAL TYPES:

There are two types of acute appendicitis, Catarrhal & Obstructive appendicitis.

Acute non obstructive appendicitis(catarrhal)

Catarrhal appendicitis is initially a mucosal and submucosal inflammation. Externally, the appendix may be quite normal, or hyperemic in early stages. However the mucosa is thickened, edematous and reddened. Later it becomes studded with dark brown hemorrhagic infarcts, patches of green gangrene, or small ulcers. Eventually the

appendix becomes swollen and turgid and the serosa becomes roughened coated with fibrinous exudates. In these cases the lumen of the appendix is patent and these cases rarely progress to gangrene. However the lymphoid hyperplasia may lead to obstruction of the lumen and proceed to gangrene. Furthermore, if the episode of catarrhal appendicitis resolves, adhesion formation and kinking of the appendix may lead to a final episode of acute obstructive appendicitis.so the catarrhal appendicitis may end up,

- Resolution.
- Fibrosis.
- Ulceration.
- Suppuration.
- Gangrene.
- Recurrent appendicitis.
- Peritonits.

Acute obstructive appendicitis

Obstructive appendicitis is the dangerous type, since the appendix becomes a closed loop of bowel containing feacal matter. When the appendix gets obstructed, it becomes distended with mucus in which the bacteria proliferates. Because of increase in the intraluminal pressure,

there is pressure atrophy of the mucosa and the bacteria invades the deeper tissue plane. The inflammation of the wall of the appendix leads to thrombosis of the vessels, as the appendix has an end arterial blood supply, gangrene occurs inevitably followed by perforation of the necrotic appendix wall.

Wilkie demonstrated the relationship between obstruction of the appendix and gangrenous appendicitis in 1914, which showed that acute appendicitis followed ligation of the appendix in the rabbit.

Wangensteen and colleagues documented in 1937 and 1940 that combined obstruction and bacterial infection resulted in acute appendicitis.

In two third of all gangrenous appendicitis, feacolith is in the lumen. A true faecolith is ovoid, about 1 to 2 cm in length, and faecal coloured. The great majority of these faecoliths are radioopaque and, in 10% of cases it contains sufficient calcium to be demonstrated on plain X-Ray film of the abdomen.

Other foreign bodies like food, debris, worms, or even gallstones have been found to obstruct the appendicular lumen. One of the rare

causes of obstructive appendicitis is the appendix becoming strangulated in the hernial sac. Thomas et al (1982) reported seven such cases.

The most frequent site of perforation is along the antimesenteric border usually near the tip, as the appendicular artery is subserosal at this point it is more prone to be involved in the inflammatory process and become thrombosed.

After perforation a localized abscess may form in the right iliac fossa or the pelvis, or diffuse peritonitis may ensue. Whether the peritonitis remains localized or becomes generalized depends on many factors, including age of the patient, virulence of the invading bacteria, the rate at which the inflammatory condition has progressed within the appendix and the position of the appendix. It is usually stated that the poorer localization of the infection occurs in infants , because the omentum of the child is filmy and less able to form a protective sheath around the inflamed appendix. A more likely explanation is that it delays the diagnosis in infants. Similar delay occur in the management of elderly persons.

.Gangrenous appendix more dangerous than the catarrhal type of appendicitis. An appendix situated in the retrocaecal position is more

likely to form a local abscess than one in the preilieal or subcaecal position.

Recurrent appendicitis

Repeated attacks of non-obstructive appendicitis leads to fibrosis and adhesions causing recurrent appendicitis.

Stump appendicitis

It is due to retained long stump of appendix after appendicectomy. which causes recurrent inflammation.

CHORNIC APPENDICITIS

The entity of chronic or grumbling appendicitis is controversial. It has been well said that “the appendix does not grumble – it either screams or remains silent.”

Both the clinical and experimental data support the belief that some patients have repeated attacks of appendicitis. In fact, it is not unusual for one or more such episodes to precede a full blown acute appendicits. In such cases, surgical specimens have shown chronic inflammatory infiltrates depending on whether the appendicectomy was performed

during the attack or in between the bouts .Thus the term chronic appendicitis has been used. But, it definitely does not mean prolonged abdominal pain lasting weeks or months.

CLINICAL MANIFESTATIONS

The diagnosis and management of acute abdominal pain remains one of the last bastions of clinical medicine. There is no other common situation where clinical features, accurate diagnosis, and immediate decision are of such importance.

Classical presentation of appendicitis:

- Colicky pain in the periumblical region.
- Pain migrates to right iliac fossa.
- Nausea and vomiting.
- Pyrexia.
- Tachycardia.
- Anorexia.

Though the patient frequently complains of constipation especially during early phase of visceral pain, many patients particularly children may present with diarrhoea. If the temperature is considerably raised (i.e.>103°F) at the very beginning attack then appendicitis is less likely

unless there is perforation and perforation is extremely uncommon before 24-36 hours of onset of symptoms.

The order of occurrence of the symptoms is of utmost importance. It was J.B.Murphy who recognized the importance of the sequence of symptoms. The march of event is

- Pain, usually epigastric or umbilical
- Anorexia
- Nausea or vomiting
- Tenderness
- Fever
- Leucocytosis

The sequence of symptoms of pain abdomen followed by vomiting and then by fever is termed as “Murphy’s syndrome” /Murphy,s triad

If vomiting occurs before pain abdomen, then the identification of acute appendicitis is questionable and a peaceful night is assured to the surgeon.

frequent symptoms	**incidence %**
Abdominal pain	100
Anorexia	100
Nausea	90
Vomiting	75
migration of pain to RIF	50
Classic symptom sequence	50

Murphy stated: “The symptoms occur almost without exception in the above order, and when the order varies I always question the diagnosis.”

Tenderness in the right iliac fossa (RIF) is a very important sign. The early deep tenderness is almost always detected just below the spino-umblical line. Tenderness over the McBurney’s point is not so constant which corresponds to the base of the appendix, as the tenderness appears to be located actually in the appendix itself. In fact, the site of the tenderness varies somewhat according to the position of the appendix.

Tenderness may be less in case of retrocaecal or post ileal appendix. With a retrocecal or a post ileal appendix, the anterior abdominal findings are less striking and tenderness may be most marked in the flank. When the inflammed un-perforated appendix hangs over the brim of the pelvis or is lying wholly within the pelvis, the so called 'silent appendix', abdominal findings may be entirely absent, and the diagnosis may be missed unless the rectum is examined, pain is felt in the suprapubic area ,as well as locally within the rectum.

Peritoneal signs

A)McBurney's sign: Finger tip pressure is made over the Mc Burney's point (i.e, at the junction of lateral third with medial two thirds of the right spino-umbilical line), which if the sign is positive, registers the maximum abdominal tenderness.

B)Pointing test: When the patient is asked to point the site of pain this usually corresponds with the site of localized tenderness in McBurney's point.

C) Rovsings sign: Palpation of the left lower quadrant may produce ache in the right iliac fossa (crossed tenderness).

D)Cough Test: When the patient coughs vigorously and holds his or her RLQ ,because of pain then RLQ peritonitis is confirmed.

E) Blumberg's sign or Rebound tenderness or Release sign: Pain on abrupt release of the palpating hand in the right iliac fossa suggests localized peritoneal irritation. However, since this exam causes severe pain to the patient, it should not be elicited frequently.

F) Cope's Psoas test: A retrocaecal appendix lies on the psoas major muscle. Inflammation of this causes irritation of psoas major muscle which is concerned with flexion of hip joint. The patient is turned to the left and the right thigh is extended, which initiates pain.

G) Cope's obturator test : Internal rotation of hip in a patient with pelvic appendicitis initiates pain as it lies over the obturator internus muscle.

H)Baldwing's sign : A hand is placed over the right flank and the patient is asked to raise the right lower limb with knee extended, in retrocaecal appendicitis this initiates pain and indicates the retrocaecal position of the appendix.

DUNPHY'S SIGN

Increased right iliac fossa pain with coughing.

AARON SIGN

A sensation of epigastric pain and distress on pressure over Mcburney's point.

ALDER'S SIGN

To diagnose acute appendicitis in pregnancy. mark the most tender spot, then on turning the patient to the left side, tenderness of uterine origin will shift while appendicular pain remains in the same point.

Local hyperesthesia in the Sherren's triangle is diagnosis of gangrenous appendicitis. Sherren's triangle is shaped by lines that unite the umbilicus, right anterior superior iliac spine and symphysis pubis. This nearly always lies in the area of distribution of the nerves from tenth, eleventh and twelfth dorsal and first lumbar spinal segments. Hyperaesthesia signifies that the inflamed appendix is, as yet, unperforated when perforation occurs it passes off.

Guarding- a state of voluntary contraction and rigidity- a state of involuntary contraction are uncommon findings in the early stage. Rigidity is usually present in case of diffuse peritonitis due to perforation.

However, the accuracy of these signs in diagnosing appendicitis is not clear.

Difficulty in diagnosis

Clinical diagnosis is difficult in patients who present with diarrhoea which mimics enteritis, especially if the appendix is in pelvic position with minimal abdominal signs. Also, in obese patients it is difficult to demonstrate the signs. Poor historians are our worst enemies.

However, the greatest difficulties lie in young children, elderly and the pregnant

Appendicitis in children is rare before the age of 2 years because of the wider lumen in infants. The clinical picture of acute appendicitis in young children is often atypical, presenting with a generalized abdominal pain. It is a good rule that if there is a localized tenderness and muscle guarding in the RIF in a previously healthy child, then the chances are very strong indeed that the diagnosis is acute appendicitis.

Appendicitis in elderly is a more serious condition. The clinical features of patients more than 60 years of age are similar to those of younger age groups in the pattern and duration of symptoms, the

temperature changes, and the leukocyte responses. The poorer localization of the infection, thrombosis of the appendicular artery which occurs early, clinical signs are not obvious due to muscular atrophy and diminished blood supply as a result of generalized atherosclerosis are important factors in allowing rapid progression of the disease.

Appendicitis in pregnancy, the risk is similar to that of non pregnant woman of the similar age. Appendicitis occurs frequently during the first & second trimesters, and during this time period the symptoms of appendicitis are similar to those seen in non pregnant women. During the third trimester, the caecum and appendix are displaced laterally. This results in localization of pain either more cephalad or laterally in the flank, leading to delay in diagnosis and an increased incidence of perforation and diffuse peritonitis as displacement of the omentum by the uterus impairs localization of the inflammed appendix. It is the peritonitis, and not the appendectomy, that poses the risk to the mother and foetus alike, and therefore, early operation is the rule.

Differential diagnosis

Nothing can be so easy or as difficult as the diagnosis of acute appendicitis.

The clinical examination and the investigations are non-specific. Thus, the list of differential diagnosis is long. Most of the entities in the differential diagnosis of appendicitis also require operative therapy and are not made worse by an exploratory laparotomy, but it is necessary to eliminate pancreatitis, myocardial infarcation, and basal pneumonia for which surgery would be a blunder. The disease in young children that are most frequently misguided for acute appendicitis are enteritis, mesentericadenitis, Meckels's diverticulitis, pyelitis, small intestinal intussusception, enteric duplication, and basilar pneumonia.

In teenagers and adults, the differential diagnosis is different in men and women. In young women, the differential diagnosis include ruptured ectopic pregnancy, Mittelschmertz pain, endometriosis, ureteric colic and salpingitis. Chronic constipation also needs a consideration.

In young men, the potential list is smaller and includes the acute onset of regional enteritis, right sided renal or ureteric calculi, torsion of the testis, and acute epididymitis.

DIFFERENTIAL DIAGNOSIS

Differential Diagnosis of Acute Appendicitis:

GASTROINTESTINAL	GENITO-URINARY	PULMONARY	OTHER CAUSES
CHOLECYSTITIS	ECTOPIC PREGNANCY	PLEURISY	PSOAS ABSCESS
CROHN'S DISEASE	ENDOMETRIOSIS	BASILAR PNEUMONIA	SICKLE CELL ANAEMIA
DIVERTIULITIS	OVARIAN TORSION	PULMONARY INFARCTION	PORPHYRIA
ENTERITIS	PELVIC INFLAMMATORY DISEASE		HEMATOMA
DUODENAL ULCER	RUPTURED OVARIAN CYST		OMENTAL TORSION
INTUSSUCEPTION	TUBO-OVARIAN ABSCESSES		
INTESTINAL OBSTRUCTION	PROSTATITIS		PARASITIC INFECTION
MECKLE'S DIVERTICULITIS	UTI		NEOPLASAMS
NECROTISING ENTEROCOLITIS	PYELONEPHRITIS		MESENTRIC LYMPHADENITIS
PERFORATED VISCUS			
VOLVULUS			PANCREATITIS

DIFFERENTIAL DIAGNOSIS IN CHILDREN
MECKEL'S DIVERTICULITIS
ACUTE COLITIS
ACUTE ILIAC LYMPHADENITIS
INTUSSUCEPTION
ROUND WORM COLIC
LOBAR PNEUMONIA
TYPHILITIS

DIFFERENTIAL DIAGNOSIS IN FEMALES
RUPTURED ECTOPIC GESTATION
MITTELSCHMERZ RUPTURE OF OVARIAN FOLLICLE DURING MID MENSTRUAL CYCLE
OVARIAN CYST TORSION
SALPINGO-OOPHORITIS

DIFFERENTIAL DIAGNOSIS IN ELDERLY
ACUTE DIVERTICULITIS
CARCINOMA CAECUM-ACUTE FEATURES
MESENTRIC ISCHAEMIA
INTESTINAL OBSTRUCTION
AORTIC ANEURYSM LEAK
CROHN'S DISEASE

DIAGNOSTIC STUDIES

Acute appendicitis is essentially a clinical diagnosis. Routine history and physical examination remain the most practical diagnosis modalities. No laboratory or radiological test yet devised is diagnostic of this condition.

WHITE CELL COUNT

The polymorph leucocytosis is an important feature of acute appendicitis. In three quarters of patients the white cell count is raised above 12,000/cumm. However, in others, the count may be slightly raised or normal, especially in children.

Neutrophilia is also one of the features of appendicitis. Appendicitis was doubtful at lowest level of the leucocyte and neutrophils count (LR0.16-0.28 at WBC count <8000/cumm, neutrophils count <7000/cumm, or rate<70%) and positive at the highest WBC Count. >13,000/cumm and Neutrophils count rate >85%. However, Coleman C et al reported that WBC is a poor predictor of the severity of the disease.

URINE EXAMINATION

The presence of hematuria or pus cells in the urine does not rule out appendicitis. Irritation of ureter or urinary bladder by the inflamed appendix may cause microscopic hematuria or pyuria.

Graham(1965) quantitatively analysed midstream urine specimens in 71 patients operated upon with the diagnosis of acute appendicitis. Of these, 62 had an acutely inflammed appendix removed and nine patients had normal appendix. In this whole group, nine female patients had microscopic pyuria and one also had hematuria. One male patient had microscopic hematuria.

C-REACTIVE PROTEIN

CRP is a non specific acute phase reactant, which appears in the sera of individuals to a variety of inflammatory conditions and tissue

necrosis. It is a non-specific indicator for acute appendicitis. There have been various studies regarding the importance of CRP in differentiating appendicitis from other non inflammatory conditions of the abdomen.One of the such studies showed that CRP value is increased in appendiceal perforation and abscess formation. However increase in leukocyte count was found to be an early hours marker of appendiceal inflammation. Also the CRP concentration >10mg/L was found to be one of the independent predictors of appendicitis.

RADIOGRAPHY

Plain films of abdomen in supine and erect position are of value in differential diagnosis of acute abdominal pain. However, they are non specific. Brookes and Killen have described a number of radiological signs in patients with acute appendicitis:

- Fluid level localized to the caecum and to the terminal ileum
- Localized ileus, with gas in the caecum, ascending colon or terminal ileum
- Increased soft tissue density in the right lower quadrant.
- Blurring of right flank stripe, the radiolucent line produced by fat between the peritoneum and transverse abdominals.
- A faecolith in the right iliac fossa

- Blurring of psoas shadow on the right side.
- Gas filled appendix.
- Free peritoneal gas.
- Deformity of cecal gas shadow due to adjacent inflammatory mass.
- Appendix calculus(0.5-6cm).
- Sentinel loop-dilated, atonic ileum containing a fluid level.
- Dilated caecum.
- Widening of the preperitoneal fat line.
- Scoliosis concave to the right.
- Right lower quadrant mass indenting the caecum.

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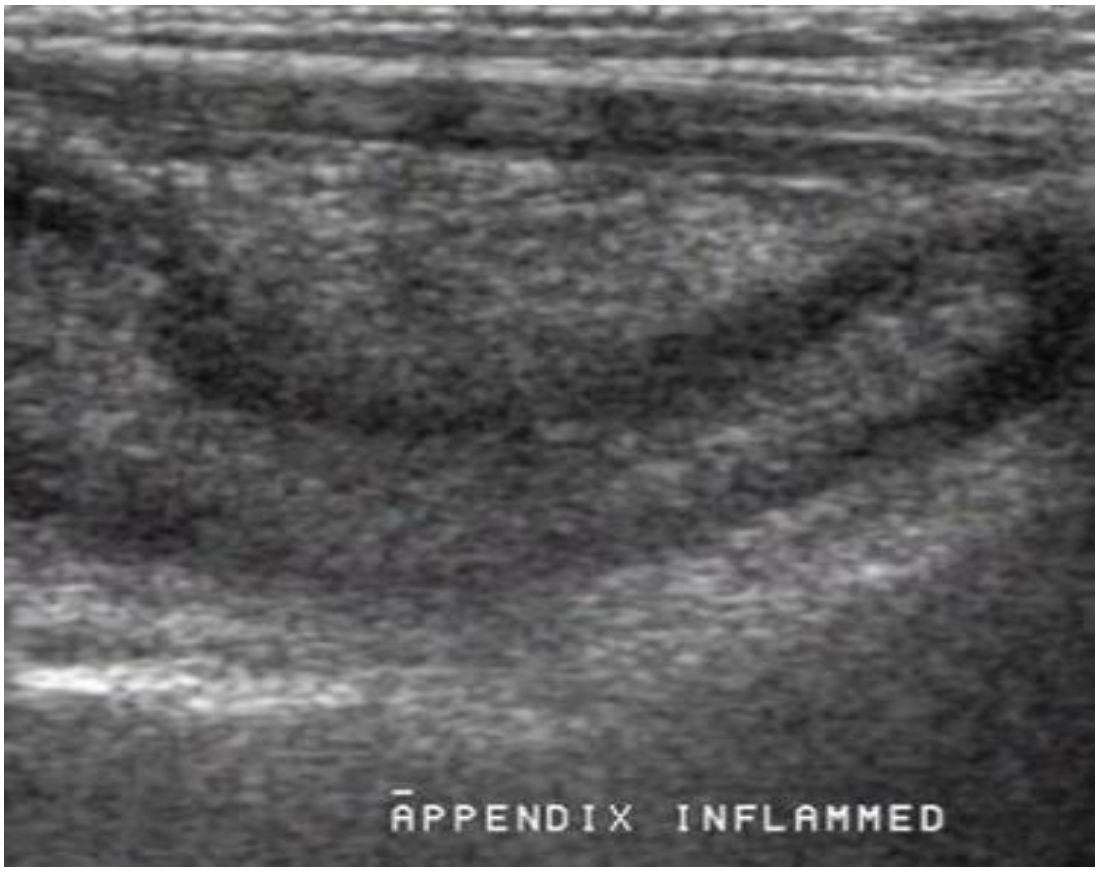
Xray Abdomen Erect

Xray Abdomen Erect

They reviewed the x-rays of 200 patients undergoing laparotomy for acute appendicitis without knowing the diagnosis. 80% of patients with acute appendicitis had one or more of these signs positive. However 37% of patients who had normal appendix had similar x-ray findings. Thus, plain films of abdomen are neither sensitive of specific to alter the maxim “If the diagnosis of appendicitis remains in doubt, take appendix out”.

ULTRASONOGRAPHY

In 1989, Julien B.C.M. Puylaert described the value of graded compression sonography in the evaluation of acute appendicitis.



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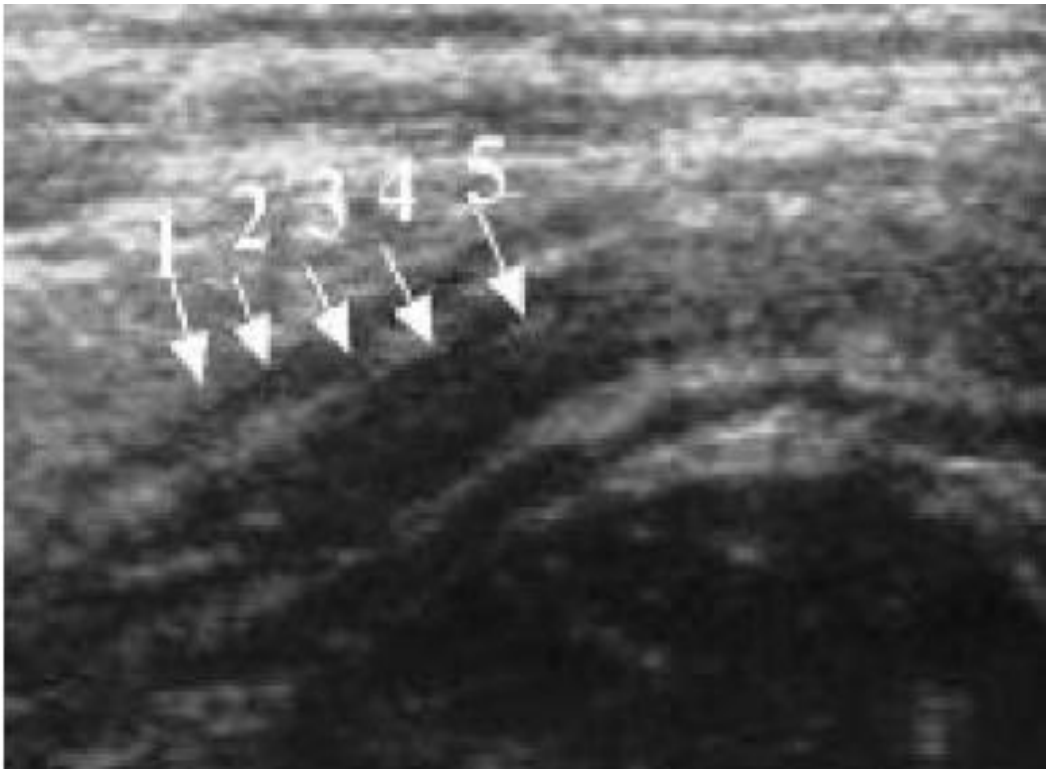
The usual findings are:

- Visualization of noncompressible appendix as a blind-ending tubular aperistaltic structure.
- Target appearance of >6mm in total diameter on cross section (81%)maximal mural wall thickness >2mm.
- Diffuse hypoechogenecity (associated with higher incidence of perforation).

- Lumen maybe distended with anechoic/hyperechoic material.
- Loss of wall layers.
- Visualization of appendicolith (6%).
- Localised periappendiceal fluid collection.
- Prominent hyperechoic mesoappendix/pericaecal fat.

USG Abdomen



USG Abdomen

FALSE NEGATIVE

- tip appendicitis .
- retrocaecal appendicitis.
- gangrenous /perforated appendicitis.
- Gas filled appendix.

FALSE POSITIVE

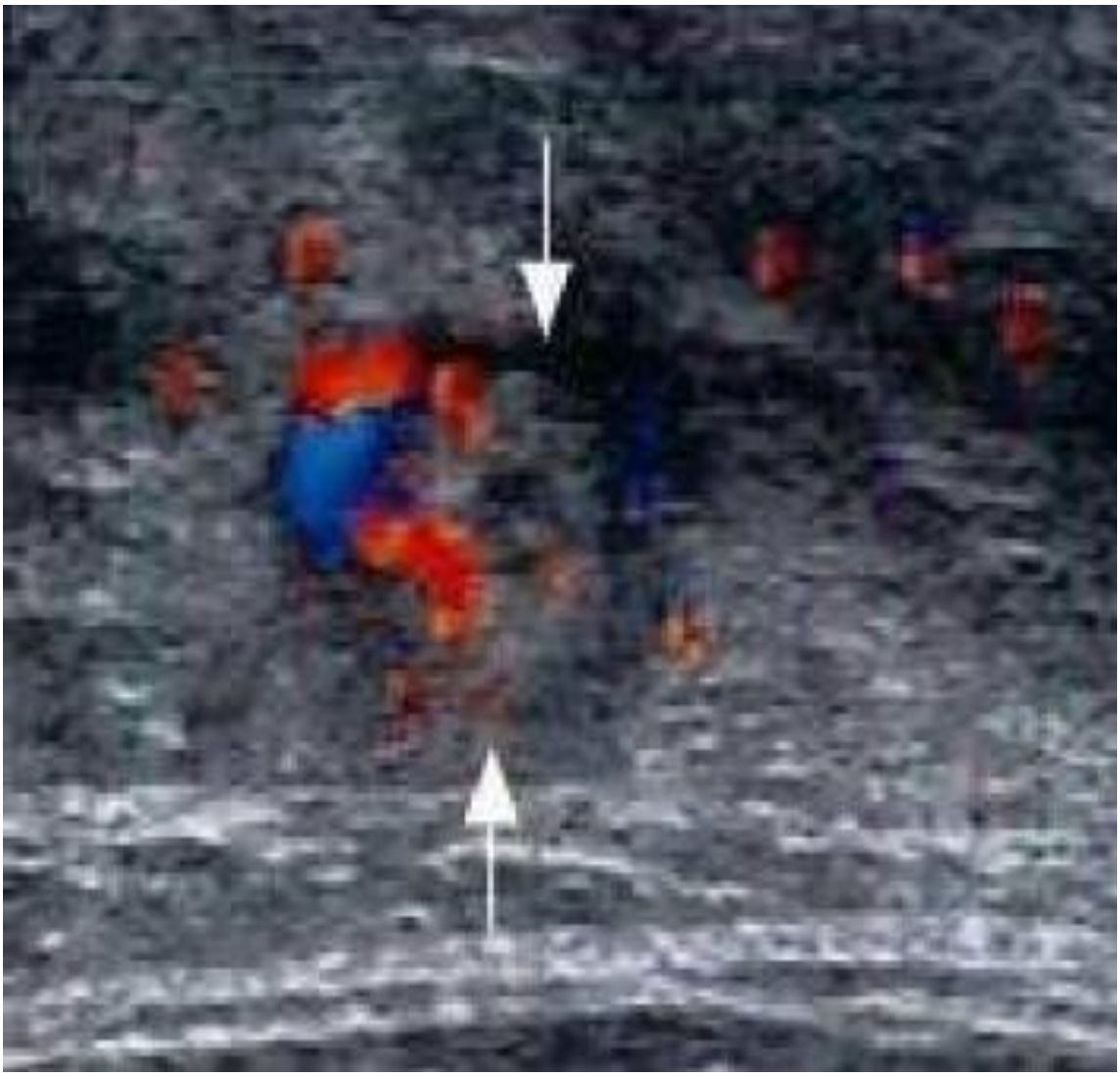
- resolving appendicitis.
- Dilated fallopian tube.
- inflammatory bowel disease.
- inspissated stool mimicking an appendicolith.

Major drawback in the investigation is, normal appendix is not visualized by these techniques. It is reasonable to perform an ultrasound in young women with suspected appendicitis in order to exclude other gynaecologic conditions.

COLOUR DOPPLER FINDINGS ARE

- Increased conspicuity (increase in size & number) of vessels in and around the appendix (hyperemia).
- Decreased resistance in arterial waveforms.
- Continuous/pulsatile venous flow.

COLOUR DOPPLER



COMPUTED TOMOGRAPHY

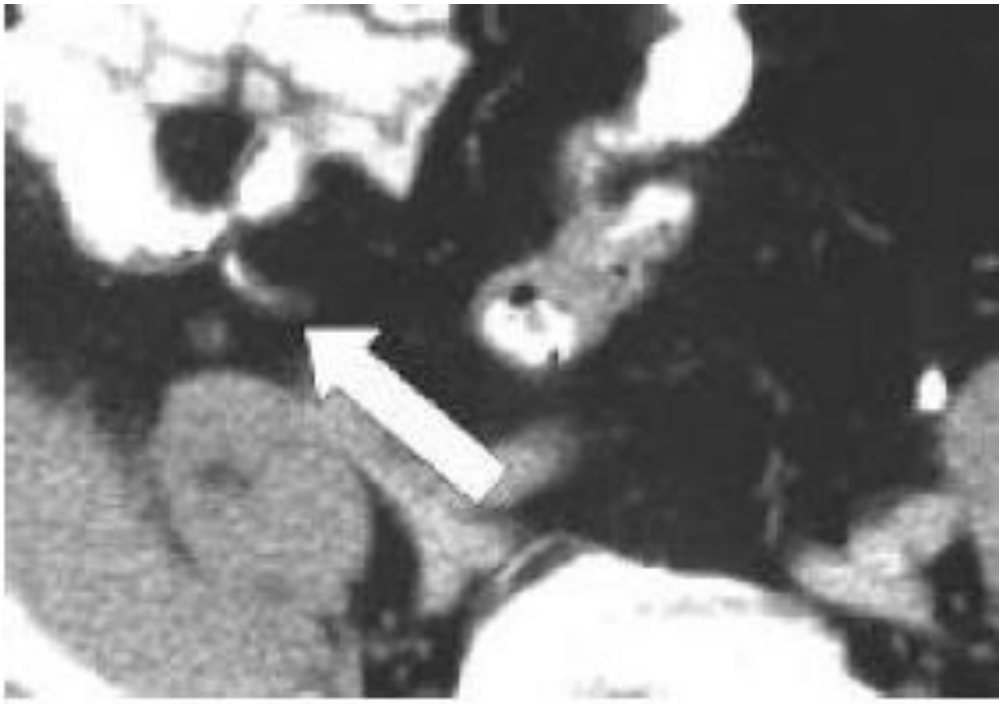
Contrast Ct scan is very much useful when diagnosis is difficult.

- Dilated appendix with dilated lumen.
- Thickened wall.
- Non-filling of the lumen by air or contrast.
- Periappendicular fluid collection.

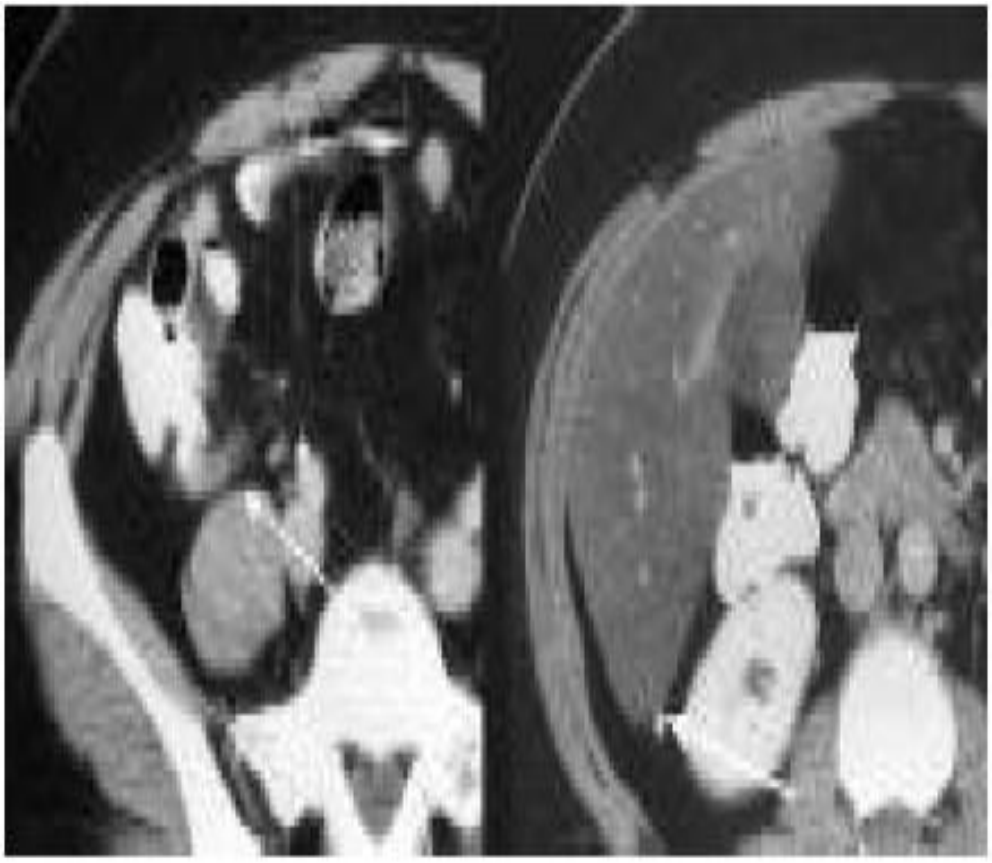
  It has 95% sensitivity and specificity.

Radionuclide Imaging

Radio labelled autologous leukocytes have been developed that have a high sensitivity and specificity in the diagnosis of appendicitis. -99m Tc-labelled intact polyvalent human immune globulin and 99m Tc labelled anti-granulocyte antibody Fab fragments also having high sensitivity and specificity.



CT – Abdomen



SCORING SYSTEM

In order to increase the accuracy of the diagnosis of appendicitis various clinical scoring systems are developed. Majority of scoring systems include a amalgamation of Historical, Clinical and Laboratory method. Each of these scores will be reviewed in detail.

ALVARADO SCORE (MANTRELS)

PEDIATRIC APPENDICITIS SCORE (SAMUEL)

LINTULA SCORE

ESKELINEN SCORE

OHMANN SCORE

LOW RISK FOR APPENDICITIS SCORE (KHARBANDA)

RIPASA Score

CHRISTIAN SCORE

FENYO - LINDBERG SCORE

TEICHER SCORE

AMBJORNSSON SCORE

IZBICKI SCRE

DEDOMBAL SCORE

Interpretation of the Alvarado score

Characteristic Score

PARAMETERS	**SCORE**
MIGRATION OF PAIN TO THE RLQ	1
ANOREXIA	1
NAUSEA AND VOMITING	1
TENDERNESS IN RLQ	2
REBOUND TENDERNESS	1
ELEVATED TEMPERATURE	1
LEUCOCYTOSIS	2
SHIFT OF WBC TO THE LEFT	1
TOTAL	10

5;NOT SURE

5-6;COMPATIBLE

6-9;PROBABLE

>9;CONFIRMED

PARAMETERS OF MODIFIED ALVARADO SCORING

PARAMETERS	**SCORING**
MIGRATION OF PAIN TO RIF	1
ANOREXIA	1
NAUSEA &VOMITING	1
TENDERNESS IN RIF	2
REBOUND TENDERNESS	1
PYERXIA	1
LEUCOCYTOSIS	2
TOTAL	9

DIAGNOSTIC--->7

NON-DIAGNOSTIC---<7

OHMANN SCORE

SIGNS AND SYMPTOMS	SCORE
MIGRATION OF PAIN TO RLQ	1
TENDERNESS IN RLQ	4.5
REBOUND TENDERNESS IN RLQ	2.5
LEUCOCYTOSIS	1.5
AGE<50	1.5
ABSENCE OF URINARY SYMPTOMS	2
CONTIOUS PAIN	2
GUARDING	1
TOTAL	16

>12 – diagnostic

< 12 – non diagnostic

ESKELINEN SCORE:

SIGNS AND SYMPTOMS	YES	NO
TENDERNESS	22.82	11.41
RIGIDITY	13.32	6.62
LEUCOCYTE COUNT>10,000	11.76	5.88
REBOUND TENDERNESS	8.50	4.25
PAIN AT RIF	7.02	3.51
DURATION OF PAIN <48 hr	4.26	2.31

>55 - diagnostic

<55 - non diagnostic

TZANAKI SCORING SYSTEM:

PARAMETERS	**SCORING**
TENDERNESS IN RLQ	4
REBOUND TENDERNESS	3
LEUCOCYTOSIS	2
USG POSITIVE FINDING; (NON COMPRESSIBLE APERISTALTIC LUMEN/THICKNESS>6mm)	6
TOTAL	15

>8/15 DIAGNOSTIC

<8/15---NON-DIAGNOSTIC

PEDIATRIC APPENDICITIS SCORE

SIGNS AND SYMPTOMS	**SCORE**
MIGRATION OF PAIN TO RLQ	1
TENDERNESS IN RLQ	2
ANOREXIA	1
NAUSEA/EMESIS	1
COUGH/PERCUSSION TENDERNESS	2
PYERXIA(NOT DEFINED)	1
LEUKOCYTOSIS	1
NEUTROPHILIA	1
TOTAL	10

>6/10-----DIAGNOSTIC

<6/10__-NON-DIAGNOSTIC

KHARBANDA LOW RISK APPENDICITIS SCORE FOR CHILDREN

SIGNS AND SYMPTOMS	SCORING
FOCAL RLQ PAIN	2
MIGRATION OF PAIN TO RLQ	1
UNABLE TO WALK/LIMP	1
NAUSEA	2
REBOUND TENDERNESS	2
ABSOULTE NEUTROPHIL(>75%)	6
TOTAL	14

Children with a score of <=5----were highly unlikely to have appendicitis

LINTULA SCORING

PARAMETER	**OUT OF**	**SCORE**
MALE GENDER	2	
SEVERE PAIN	2	
RELOCATION OF PAIN	4	
VOMITING	2	
PAIN IN RIF	4	
FEVER(>37.5)	3	
GUARDING	4	
BOWEL SOUND ABSENT/TINKLING	4	
REBOUND TENDERNESS	7	
TOTAL	32	

>21/32----HIGH RISK FOR APPENDICITIS

<15/32----UNLIKE TO BE APPENDICITIS

FENYO-LINDEBERG SCORE:

DIAGNOSTIC CRITERIA	RESPONSE	VALUE
SEX	MALE FEMALE	+8 -8
WBC	>14K 9.0-13.9K <8.9K	+10 +2 -15
DURATION OF PAIN(HOURS)	<24 24-48 >48	+3 0 -12
PROGRESSION OF PAIN	YES NO	+3 -4
RELOCATION OF PAIN	YES NO	+7 -9
VOMITING	YES NO	+7 -5
AGGRAVATION BY COUGHING	YES NO	+4 -11
REBOUND TENDERNESS	YES NO	+5 -10
RIGIDITY	YES NO	+15 -4
TENDERNESS remote RIF	YES NO	-6 +4
CONSTANT		-10

The thershold score to predict appendicitis is -2

THE RIPASA SCORE

PARAMETERS	VALUE
SEX	1.0-MALE 0.5-FEMALE
AGE	1.0-<39.9 YEARS 0.5->40 YEARS
RLQ PAIN	0.5
MIGRATION OF PAIN TO RIF	0.5
ANOREXIA	1.0
NAUSEA AND VOMITING	1.0
DURATION OF SYMPTOMS	1.0-<48 HOURS 0.5->48 HOURS
RLQ TENDERNESS	1.0
RLQ GUARDING	2.0
REBOUND TENDERNESS	1.0
ROVISING SIGN	2.0
FEVER	1.0
RAISED WBC	1.0
NEGATIVE URINE ANALYSIS	1.0
FOREIGN NATIONAL REGISTRATION IDENTITY CARD	1.0
TOTAL	16

>7—DIAGNOSTIC

<7---NON-DIAGNOSTIC

CHRISTIAN SCORE

- abdominal pain –for less than 48 hrs
- vomiting
- RIF tenderness
- low grade fever(<-38.8*C)
- POLYMORPHONUCLEAR

LEUKOCYTOSIS—TC

>10,000&NEUTROPHIL>75%

>4/5 criteria positive -----highly suggestive of appendicitis.

CLINICAL OUTCOME FOR APPENDICITIS

1. Resolution.

2. Gangrenous appendicitis.

3. Perforation leading to generalized peritonitis.

4. Appendicular mass or abscess formation.

5. Fibrosis.

TREATMENT

Various types of incisions;

1. Classic MC Burney's Incision :

Made at right angles, to the point of medial two third and lateral one third along the line between the umbilicus and the anterior superior iliac spine.

2. Transverse or Rocky Davis Incision :

May be used at the same location.

3. Lanz incision :

Incision made 2-3cm medial to the anterior superior iliac spine, extended medially in the line of the skin crease over McBurney's point.

4. The Paramedian incision :

- less suitable.
- organ is comparatively inaccessible in this approach.
- Possible to contaminate the peritoneum medially in cases where the infection was strictly localized.

FLOWER-WEIR INCISION

Extension of the incision through the rectus muscle.

RUTHERFORD-MORRISON INCISION

It is an oblique muscle-cutting incision with its lower end at McBurney's point .

Muscles are cut upwards and laterally.

This incision is useful if the appendix is para or retrocaecal and fixed.

BATTLE,S INCISION

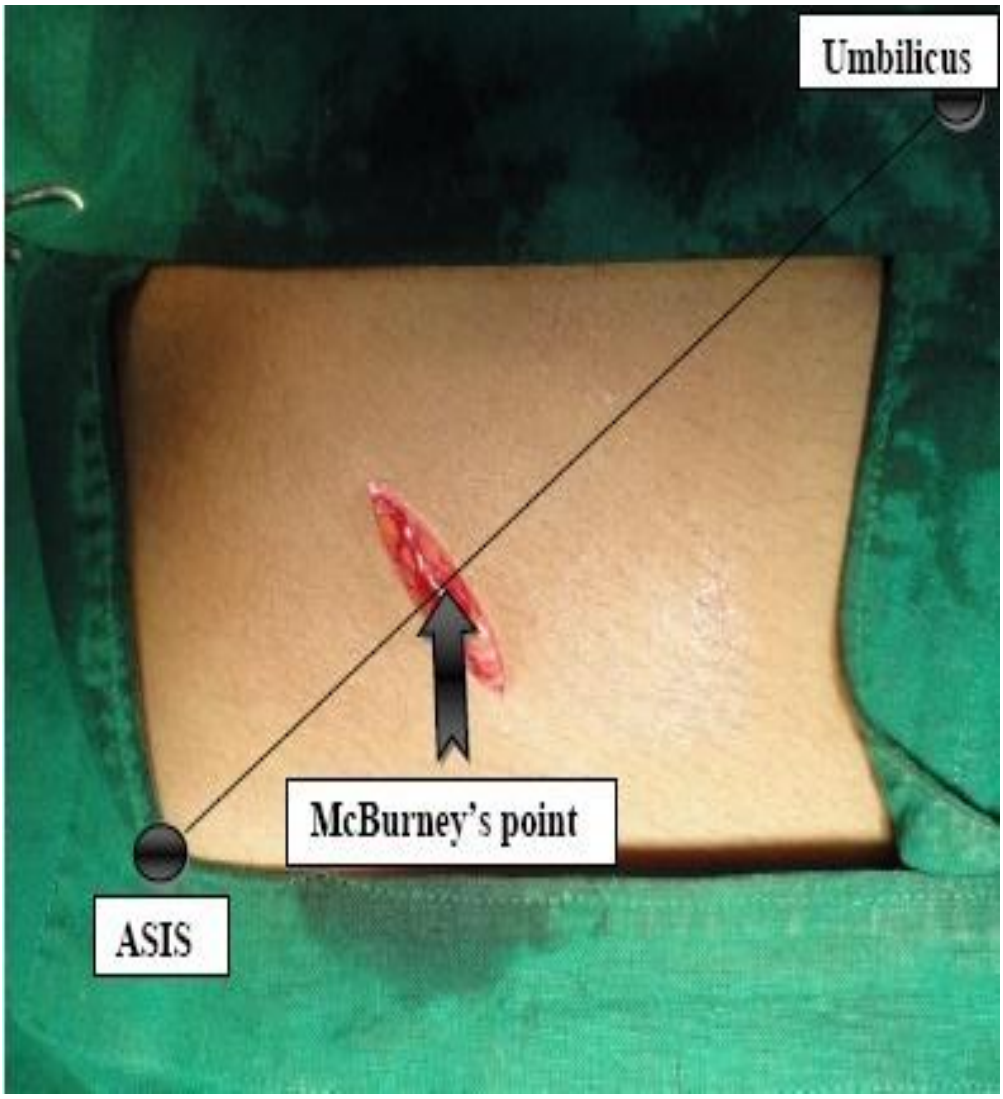
Battle, described an incision of variable length in the right semi lunar line. This involves the rectus medially, the inferior epigastric vessels are easily avoided, but the vertical peritoneal incision is limited to about 2 1/2 inches, if the damage to the segmental nerves is to be avoided.

PROCEDURE

- Under general anaesthesia, skin is incised.
- Two layers of superficial fascia are cut.
- External oblique aponeurosis is opened along the line of incision.
- Internal oblique and transverse muscles are split along the line of fibres.
- Peritoneum is opened along the line of incision.
- Caecum is identified by taeniae,and ileocaecal junction.omentum when adherent is separated.
- Appendix is held with Babcock's forceps. mesoappendix with appendicular artery is ligated.
- Using silk,a purse string suture is placed around the base of the appendix.
- Base of the appendix is crushed with the artery forceps and transfixed using vicryl.

- Appendix is cut distal to the suture ligature and removed. Stump is cleaned with antiseptics .
- After saline irrigation,anterior abdominal wall closed as layers.

SKIN INCISION



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MUSCLE LAYER

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APPENDIX WITH CAECUM

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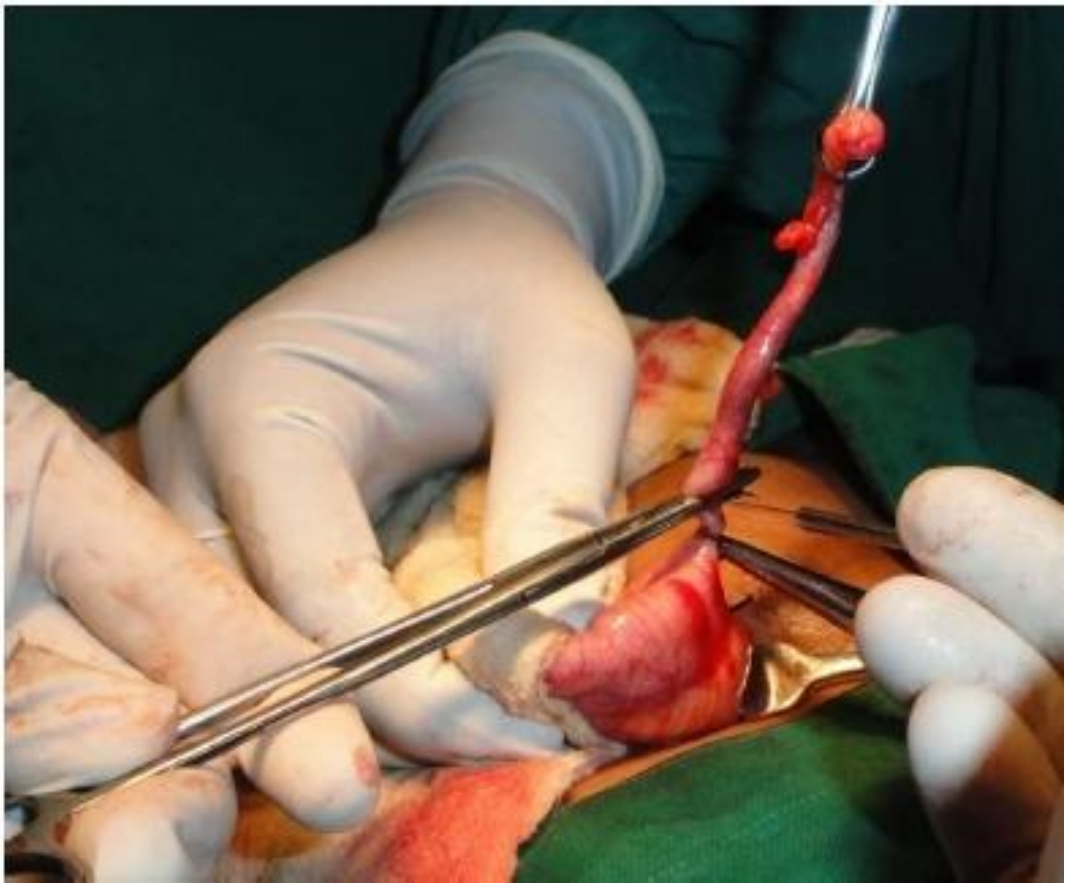
INFLAMED APPENDIX



Appendix Specimen

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PROBLEMS OF OPEN APPENDICECTOMY

1. The caecum cannot be found.

- Either not descended fully or malrotation of the intestine.
- Extension of the incision upward.

2. Caecum cannot be delivered :

Adequate access and vision. The peritoneal reflection around the lower pole may be divided bearing in mind, gonadal vessels &ureter lie medially just deep to the peritoneum.

3. Appendix cannot be found :

- Make certain that it is the caecum that has been delivered. Transverse colon is recognised by the attachment of greater omentum, sigmoid colon by appendices epiploicae.
- Trace the taeniacoli of the caecum, leads to the base of the appendix. Back or undersurface of the caecum should be palpated, the appendix may be buried in the caecal wall.
- If previous appendicectomy excluded, only possibility is, organ has become inverted (or) intussuscepted.

4. Appendix has sloughed off :

- The mesoappendix anchors the organ in the field of operation.
- It may be in 2 portions if a faecolith has perforated through the wall.

- Both portions must be removed and the faecolith retrieved usually from the pelvis.

5 .The appendix lies buried retrocaecally :

Enlarge the wound, caecum is retracted to the left.

- Reflection of the peritoneum on the lateral aspect of the caecum is in view, a hockey- stick shaped incision is made in the parietal peritoneum, after a little blunt dissection, in the retroperitoneal space the caecum can be retracted still further to the left rendered far more mobile and rotated, the combined effects of which result in bringing the greater portion of a hidden appendix.

6. Appendix clothed with adherent Greater omentum:

- Not to disturb adherent omentum, when within it lies a gangrenous or perforated appendix.
- Greater omentum divided between hemostats at a convenient distance from the appendix and then appendicectomy conducted.

7. Appendix is gangrenous near its junction with caecum

- Possibility of sudden gush of liquid faeces from the caecum, to avoid this, if the caecum is ballooned, deflate the caecum before appendicectomy.
- The method of closing the stump is, by two sutures transfixing the caecal wall. These must be inserted before the appendix is

amputated and are later oversewn by interrupted seromuscular sutures.

8. The mesoappendix is gangrenous and cuts out

- If a ligature will not hold, a stitch applied directly beneath a spurting vessel may stop the bleeding.

RETROGRADE APPENDICECTOMY

Indication

- Base of the appendix is accessible and difficulty is experienced in identifying or delivering the distal part of the organ completely.
- In retrocaecal appendicitis.

LAPAROSCOPIC APPENDECTOMY

ADVANTAGES OF LAROSCOPIC APPENDICECTOMY
DIAGNOSIS IS CONFIRMED
OTHER PARTS OF ABDOMEN ARE VISUALISED
PELVIC STRUCTURES IN FEMALES ARE ASSESSED
TRAUMA OF ACCESS IS LESS
FASTER RECOVERY
IT'S BETTER ACCESS IN SITUS INVERSUS,SUBHEPATIC APPENDIX

DISADVANTAGES
TECHNICAL DIFFICULTIES
COST FACTOR AND AVAILABILITY

PATIENT SELECTION

Almost any patient with acute appendicitis can undergo laparoscopic appendicectomy. The contraindications to the procedure includes patients unfit for general anaesthesia and those who are crtically ill due to peritonitis secondary to perforated appendicitis.

The anaesthesiologist and the anaesthesia equipment are positioned at the head end, and the video monitor and instrument table are positioned at the caudal end.

POSITION OF THE PATIENT

Supine position and both hands tucked by the side.

Later the table may have to be tilted in a Trendelenburg and right side-up position to let the abdominal viscera gravitate away from the right lower quadrant.

TROCARS

- ❖ 10mm camera port placed at the umbilicus.5mm port placed each lower side or one in left side other in lower midline.
- ❖ Pneumoperitoneum is created using CO2.

Procedure

- Appendix is held with grasper or Babcock's forceps.
- Mesoappendix is cauterised by cautery.
- Appendix is dissected upto the base of the appendix.
- Base is ligated with catgut.
- Appendix dissected and removed through the 10mm port along with the reducer.
- If gangrenous or perforated appendix is present ,drain can be placed through one port.

Postoperative

Oral food is started in 12 hours.

Iv antibiotics,analgesics.

It is a day care procedure. Patient can be discharged within a day.

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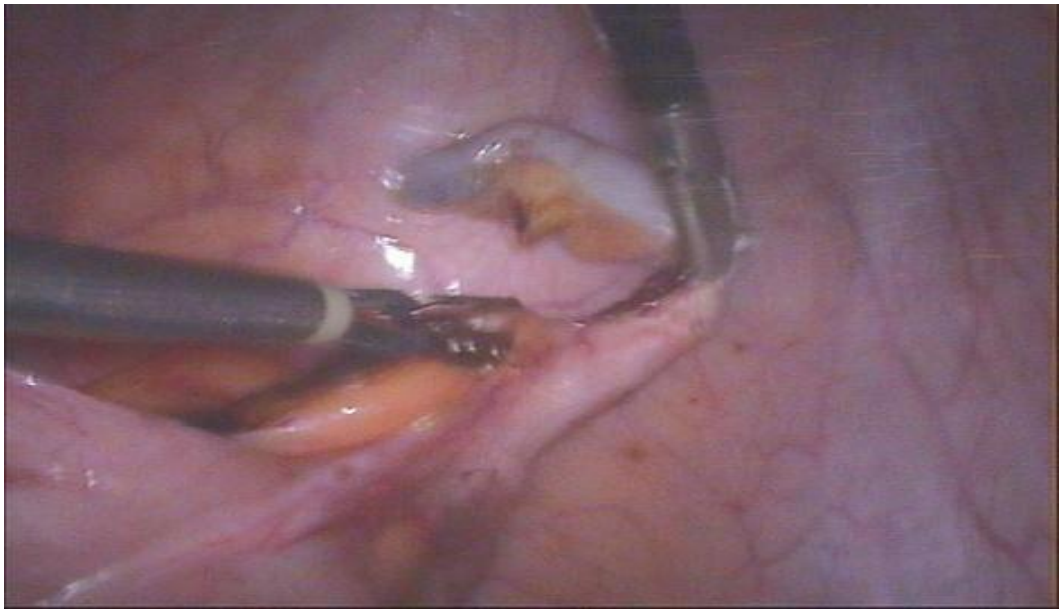
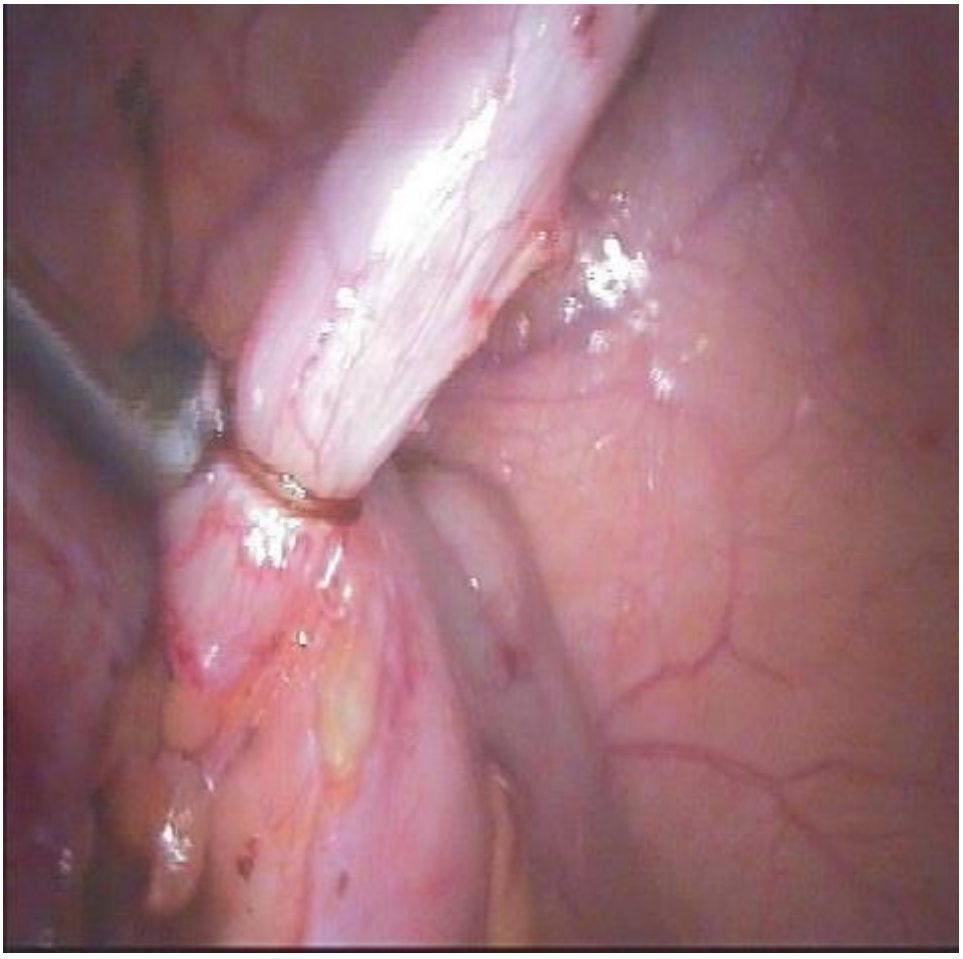
. 

.**LAPRASCOPIC APPENDICECTOMY**



PLACEMENT OF A DRAIN

Peritoneal wash should be performed. In uncomplicated appendicitis , drain is not indicated.

CLOSURE OF WOUNDS

10mm ports closed as two layer.

5mm port site closed as single layer.

POST-OPERATIVE MANAGMENT:

Oral feeds till the bowel sounds return and flatus is passed.

Drain if placed in the peritoneal cavity ,is removed by 24-48hrs.

Sutures are removed by 7-10 days.

NATURAL ORIFICE TRANSLUMINAL ENDOSCOPIC SURGERY (NOTES)

NOTES is the newest technique in the field of recent surgery. it involves passing instruments and camera through a natural orifice, such as urethra, vagina, rectum, mouth, which provides the access to the desired organ.

This procedure have merits such as less pain, quicker recovery, fewer complication and no scar, avoids incisions through the skin, muscle, and nerves of the abdomen.

NOTES

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Appendicitis complicating Crohn's disease

- If caecal wall is healthy at the base of appendix. Appendicectomy can be performed.
- Appendix is rarely involved in Crohn's disease in this situation.

PELVIC ABSCESS

It is a complication of appendicitis, it causes spiking pyrexia, pelvic pressure, discomfort, tenesmus,. If it is recent abscess immediate or early operation with or without appendicectomy is the treatment of choice for recent abscess and the mobile mass.

Established abscess

Abscess walled off from surrounding structures, or an abscess resolving with antibiotics. Conservative management is contra-indicated in children, pregnant women and the elderly. Drainage is to be done as soon as the patient is fit. In adults, appendicectomy should be done without breaking the walling off adhesions. If appendicectomy not done at the time of drainage, interval appendicectomy should be done 6-8 weeks later. Antibiotic coverage to be given in meantime.

TECHNIQUE OF DRAINAGE:

Precaecal, pre-ileal, post ileal abscess:

Swelling located by palpation. Incision is made over the most prominent part.transperitoneal approach.abscess wall opened, pus drained. Drain is left undisturbed for 72 hrs.

Retrocaecal abscess

Drained by retroperitoneal approach. Transverse incision is immediately medial to ASIS, lateral edge of the peritoneum exposed and medially stripped with finger and abscess to be drained.

Pelvic abscess

Felt on rectal examination. if pointing through proctoscope,drain with artery forceps .if pointing through vagina, posterior colpotomy to be done.

- Rectal examination reveals a boggy mass in pelvis.
- Pelvic USG, or CT scan will authenticate the diagnosis.
- Per rectal route drainage is the treatment of choice.

OCHSNER-SHERREN REGIMEN

Conservative management for appendicular mass to avoid faecal fistula formation.

INDICATIONS

- When the diagnosis is in doubt and delay is inevitable.
- When the patient cannot stand surgical or anaesthetic risk due to medical condition.
- When an abscess has formed with less chance of spread of infection.
- When no facility to operate.
- When appendicular mass has already formed.
- When patient refuses surgery.

INCLUDES OBSERVATION

- Temp, Bp, pulse rate monitoring.
- Marking the mass to identify the progression/regression.
- Antibiotics (ampicillin, metronidazole, gentamycin or other drugs given depending on severity and requirement).
- Iv fluids.
- Analgesics.
- Initial nasogastric aspiration.
- Patients shows response by 48-72 hrs.

Signs of improvement:

- Mass size reduces.
- Temperature normal.

- Pulse become normal.
- Appetite is regained.
- 90% improves & responds.
- Interval appendicetomy may planned after 6 weeks.

CRITERIA TO DISCONTINUE THE REGIMEN

- Persistent vomiting.
- Persistent tachycardia and high fever.
- Increase or spread of pain abdomen(diffuse peritonitis).
- Increased size of the mass.
- Abscess formation.
- In this patients regimen to be discontinued and the patient is taken up for immediate surgery.

CONTRAINDICATIONS FOR OCHSNER-SHERREN REGIMEN

- When diagnosis is in doubt.
- In gangrenous appendicitis.
- In patient with diffuse peritonitis.
- In children and elderly.

Laparotomy indicated if,

- There is any evidence guarding/rigidity.
- Patient becomes toxic.

- If an abscess is present, it should be drained under radiological control or open method.

POST OPERATIVE COMPLICATIONS

Only About <5% of operated non-appendicitis patients develop complication.

But in complicated appendicitis patient may develop post op complication of around >30%.

EARLY COMPLICATIONS

- Haemorrhage.
- Diffuse peritonitis.
- Pulmonary complications.
- Neurogenic or adhesive ileus.
- Retention of urine.

INTERMEDIATE COMPLICATIONS

Secondary or residual abscess

- Pelvic
- Paracaecal
- Perinephric
- Subdiaphragmatic

Wound infection commonest in complicated appendicitis.

Pyelophlebitis.

Femoral or iliac vein thrombosis.

Parotitis.

Persistent sinus or fistula.

Rupture of the caecal wall.

LATE COMPLICATIONS

- Incisional hernia.
- Right sided indirect inguinal hernia.
- Intestinal obstruction.
- These complications can be managed very well by early recognition and skilful surgical intervention.

PROGNOSIS

Simple appendicectomy in uncomplicated acute appendicitis still carries a mortality rate of 0.2% regardless of the phase of the disease, the overall mortality of the primary appendicectomy is less than 1%.

The average hospital stay approximates 3 days for simple appendicectomy, but in complicated appendicectomy it extends upto 7 days.

Age, anaesthesia, infirmity, associated co-morbidity influence the outcome with morbidity and mortality.

Antimicrobials, naso-gastric intubation, improved surgical techniques and gastric decompression, pre and post operative fluids and electrolyte replacement and the application of supportive care aids in recovery.

These cares appreciably reduce the mortality and morbitiy of the complications of appendicitis.

MATERIALS AND METHODS

OBJECTIVES OF THE STUDY

1) To do observational study of three scoring systems in the diagnosis of acute appendicitis.
2) To compare the sensitivity ,specificity of these scoring with HPE report as a gold standard
    - Modified Alvarado scoring
    - Ohmann scoring
    - Eskielinen score

MATERIALS AND METHODS

1) SOURCE OF DATA

Cases admitted in M.G.M.G.H with suspicion of appendicitis.

Patients were monitored and scored by the three diagnostic scoring systems.

2) STUDY DESIGN AND SAMPLING

Total of hundred cases with provisional diagnosis of acute appendicitis between Sep 2012- aug 2014.

The decision of appendicectomy was taken by the senior surgeon irrespective of the score.

INCLUSION CRITERIA

1) All patients who present at the emergency department in our hospital between (sep 2012-sep2014) with clinical suspicion of acute appendicitis.
2) Patients were monitored and scored by the three scoring systems.
3) Age group 10 yrs - 70 yrs.
4) Both sexes.
5) Hemodynamically stable patients without concurrent illness.

EXCLUSION CRITERIA

1) Patients with other known causes of pain.
2) Patients undergone previous appendicectomy.
3) Age <10 yrs.
4) Age >70 yrs.
5) Hemodynamicallly unstable patients.
6) Pain > 5 days duration.
7) Appendicular lump/mass.
8) Features of intestinal obstruction.
9) History of trauma to right iliac fossa.
10) Patients presenting with pain abdomen along with distension of abdomen.
11) Pregnant females.
12) Patient not willing for surgery.

RESULTS AND ANALYSIS

OBSERVATION & RESULTS

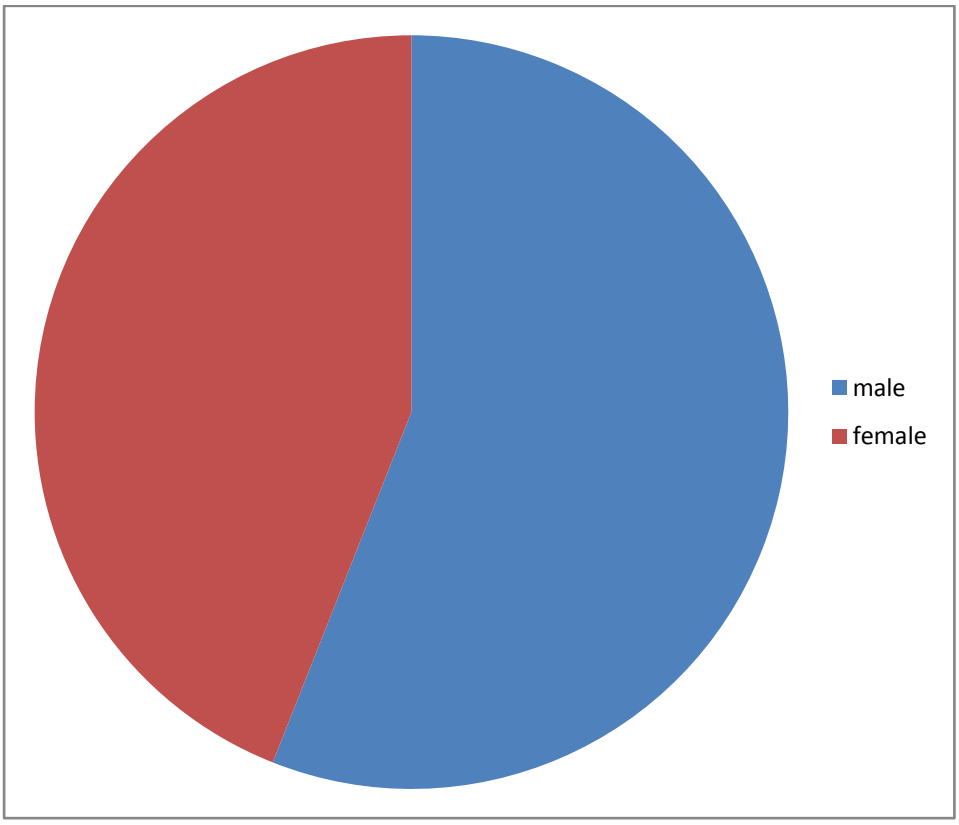
A total of 100 patients admitted during the period from sep2012 to sep 2014 at M.G.M Hospital and K.A.P.V Government Medical College are included in the study. After admission the data regarding the patient are entered in the proforma and followed up until discharge/death. The data obtained are compared and the observation done are given below. Scoring is done according to their clinical presentation.

SEX DISTRIBUTION

The sex distribution of patients who were analysed and tabulated and given below.

SEX	NO.OF.CASES	PERCENTAGE
MALE	56	56%
FEMALE	44	44%

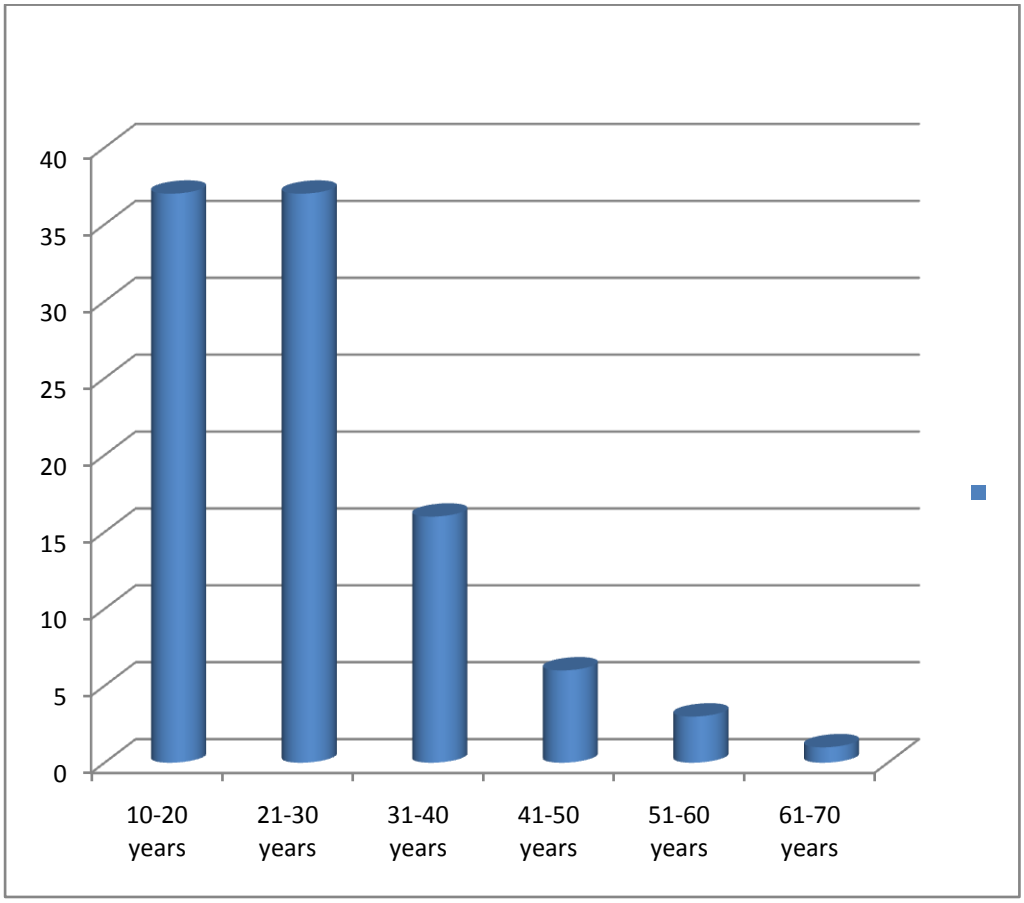
The male to female ratio is=1.27:1



AGE DISTRIBUTION

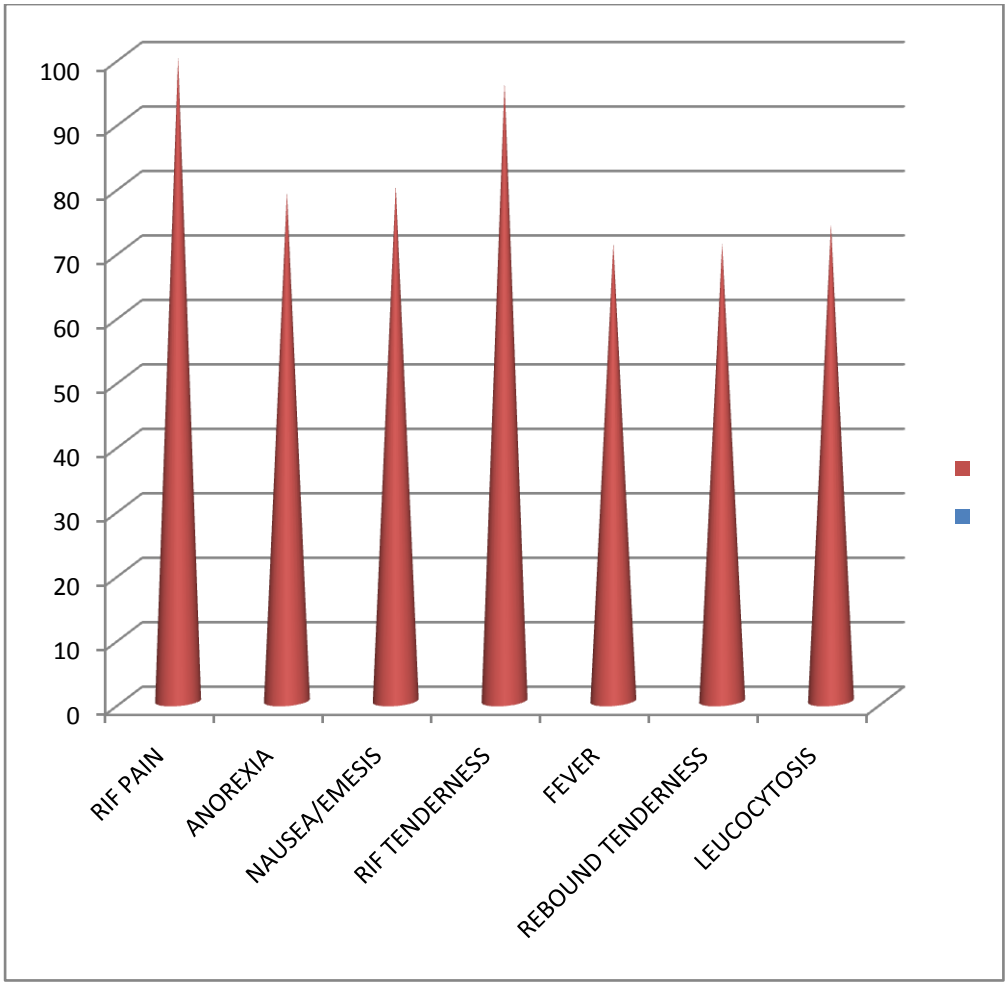
Age in years	No.of patients
10-20	37
21-30	37
31-40	16
41-50	6
51-60	3
61-70	1

Acute appendicitis more common in second and third decade age groups.



Presentation of clinical features

CLINICAL FEATURES	NUMBER	%
RIF pain	100	100
Anorexia	79	79
Nausea/emesis	80	80
RIF tenderness	96	96
Fever	71	71
REBOUND TENDERNESS	71	71
LEUCOCYTOSIS	74	74
Duration <48 hrs	88	88
Rigidity	4	4
Continous pain	86	86
Age<50	96	96
Guarding	19	19
Absent urinary symptoms	88	88



All the patients have abdominal pain,

Nausea/vomiting present in 80 patients.

Anorexia present in 79 patients.

Fever present in 71 patients .

Leucocytosis present in 74 patients.

VALIDATION OF MODIFIED ALVARDO SCORE:

PARAMETERS	SCORING
MIGRATION OF PAIN TO THE RLQ	1
ANOREXIA	1
NAUSEA AND VOMITING	1
TENDERNESS IN RLQ	2
REBOUND TENDERNESS	1
ELEVATED TEMPERATURE	1
LEUCOCYTOSIS	2
TOTAL	9

Score=

>7---diagnostic

<7-----non-diagnostic

SCORES	HPE=POSITIVE	HPE=NEGATIVE
1=0	0	0
2=0	0	0
3=0	0	0
4=6	0	6
5=0	0	0
6=26	16	10
7=10	5	5
8=31	30	1
9=27	26	1
TOTAL=100	=77	=23

Patients with score >7=68

Patients with score<7=32

No of patients who underwent appendicectomy=100

Histo-pathologically positive appendicitis = 77

Histo-pathologically negative appendicitis=23

No of patients who had normal appendix

With score>7=7

Patients with score <7 but developed appendicitis=16

No of patients with normal appendix with score<7=16

SCORING	HPE+IVE	HPE-IVE	TOTAL
>7/9(POSITIVE)	61	7	68
<7/9(NEGATIVE)	16	16	32
TOTAL	77	23	100

SENSITIVITY OF THE TEST=79.22%

SPECIFICITY OF THE TEST=69.56%

VALIDATION OF OHMANN SCORE

PARAMETER	OUT OF	SCORE
RIF TENDERNESS	4.5	
REBOUND TENDERNESS	2.5	
ABESENCE OF URINARY SYMP	2.0	
CONTINUOUS PAIN	2.0	
TC(>10^5)	1.5	
AGE<50 YRS	1.5	
MIGRATION OF PAIN	1.0	
GURDING	1.0	
TOTAL	16.0	

Score=

>12---diagnostic

<12----non-diagnostic

Patients with score >12=49

Patients with score<12=51

No of patients who underwent appendicectomy=100

Histo-pathologically positive appendicitis =77

Histo-pathologically negative appendicitis=23

No of patients who had normal appendix

With score>12=3

Patients with score <12 but developed appendicitis=31

No of patients with normal appendix with score<12=20

SCORING	HPE+IVE	HPE-IVE	TOTAL
>12(POSITIVE)	46	3	49
<12(NEGATIVE)	31	20	51
TOTAL	77	23	100

SENSITIVITY OF THE TEST=59.74%

SPECIFICITY OF THE TEST=86.95%

VALIDATION OF ESKELINEN SCORE:

SIGNS AND SYMPTOMS	YES	NO
TENDERNESS	22.82	11.41
RIGIDITY	13.32	6.62
LEUCOCYTE COUNT>10,000	11.76	5.88
REBOUND TENDERNESS	8.50	4.25
PAIN AT RIF	7.02	3.51
DURATION OF PAIN <48 hr	4.26	2.31

Score=

>55 ---diagnostic

<55---non-diagnostic

Patients with score >55=59

Patients with score<55=41

No of patients who underwent appendicectomy=100

Histopathologically positive appendicitis :79

Histopathologically negative appendicitis:21

No of patients who had normal appendix

With score>55=4

Patients with score <55 but developed appendicitis=22

No of patients with normal appendix with score<55=19

SCORING	HPE+IVE	HPE-IVE	TOTAL
>55(+IVE)	55	4	59
<55(-IVE)	22	19	41
TOTAL	77	23	100

SENSITIVITY OF THE TEST=71.42%

SPECIFICITY OF THE TEST=82.60%

DISCUSSION

DISCUSSION

The diagnosis of the appendicitis is still difficult due to atypical appearance in most of the cases and be deficient in trustworthy diagnostic test although there has been some improvement in the diagnosis of acute appendicitis over the past several decades the percentage of normal appendices reported in various series is from 10-30%.

Clinical scoring systems have proved useful in the management of number of surgical conditions in the past few years. Various scores have been developed to aid the diagnosis of acute appendicitis, although many diagnostic scoring have been described, those are difficult to implement in the clinical situation. Modified Alvarado , Ohmann, Eskelinen are the simple score based on clinical, and lab investigations.

Abdominal ultrasound requires special equipment and it is operator dependent.

Computed tomography is expensive and not readily available everywhere.

It is the same with radioisotope studies. Abdominal x-ray is of limited used and has the risk of radiation exposure.

This study was conducted in order to analyse 100 patients in our hospital with a clinical presentation suggestive of appendicitis and underwent surgery during the period from September 2012 to sep2014. The decision of surgery according to the clinical presentation was taken by the senior surgeons.

After appendectomy, the appendix was assessed & sent for histo-pathological examination and reported.

Then a study of the observations was done and an attempt was made to correlate the clinical presentation in each case with pathological findings.

The results of conservative management, operative finding and Histo-pathological examination reviewed.

The results was compared using Modified Alvarado ,Ohmann Eskeilen scoring system and validation of these scoring done.

Out of 100 cases studied, 56were male and 44 were female.

In our series a score using MODIFIED ALVARADO system sensitivity is 79.22%, specificity is 69.56%.

In our series using OHMANN system sensitivity is 59.74% and specificity is 86.95%.

In our series using ESKELINEN system had a total sensitivity is 71.42% and specificity is 86.95%.

REVIEW OF LITERATURE

The following studies are comparable to our study.

VALIDATION OF A DIAGNOSTIC SCORING SYSTEM(OHMANN SCORE) IN ACUTE APPENDICITIS.

*ZIELKE A

SITTER H,SCHAFER E,HASSC,LORENZ W,ROTHMUND M.

OHMANN SCORE:

OHMANN SCORE	SITTER ET AL	ZIKIE ET AL 1999	OUR STUDY
SENSTIVITY	50%	63%	59.74%
SPECIFICITY	94%	93%	86.95%

ESKELINEN SCORE	SITTER ET AL	ZIELKE ET AL 2001	OUR STUDY
SENSTIVITY	70%	79%	71.42%
SPECIFICITY	92%	85%	82.60%

The following studies are comparable to our study.

*H.SITTER,

S.HOFFMANN,J.HASSAN,

A.ZIELKL ET AL STUDY

LANGENBECK'S ARCHIVES OF SURGERY AT JUNE 2004,VOL 389.

CONCLUSION

CONCLUSION

In our study ,the better scoring system in the diagnosis of appendicitis based on clinical parameters and simple lab investigation , which is comparable to study conducted by *H.SITTER,S.HOFFMANN,J.HASSAN,A.ZIELKL ET AL STUDY LANGENBECK'S ARCHIVES OF SURGERY AT JUNE 2004,VOL 389.among these scoring system MODIFIED ALVARDO had better sensitivity.but its variable in other subgroups according to age and sex variation.The parameters of these three scoring systems are mostly same, but the idea of improving the diagnostic accuracy simply by assigning numeric values to defined signs and symptoms has been a goal.

It is well known that sex and age play an important role in the presentation of acute appendicitis.

These scoring systems ,do not take into consideration different diagnostic weights of each parameter in different subpopulation

No single score may be used alone to dictate or decline surgey, different cut-off points may also be considered for different subpopulation.

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ANNEXURES

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CERTIFICATE OF CLEARANCE

This is to certify that the project work titled Validation of various Diagnostic scoring systems in diagnosis of acute apprendicitis in K.A.P.Viswanatham Government Medical College, Tiruchirapalli Proposed by Dr.R.Ranjith Babu part of fulfillment of M.D/M.S course in the subject of Surgery for the year 2012-2015 by The Tamilnadu Dr.MGR Medical University has been cleared by the ethical committee.

14/9/2013

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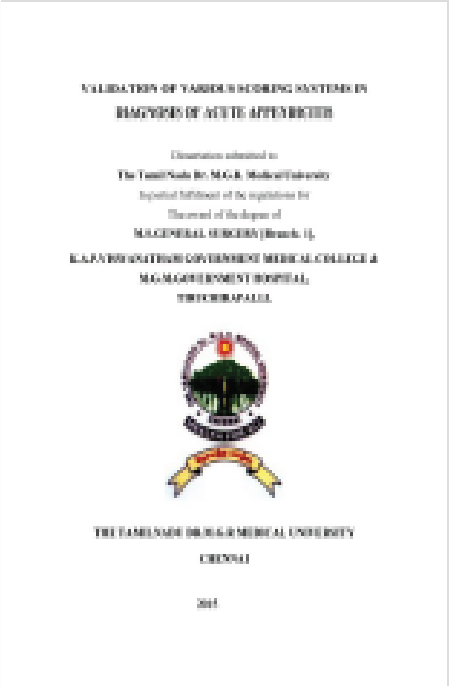

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MAHAMAM GOVERNMENT HOSPITAL,
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THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY
CHENNAI

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TIRUCHIRAPALLI.

கய ஒப்புதல் படிவம்

ஆய்வு செய்யப்படும் தலைப்பு

பல்வேறு வகையிலான குடல்வால் நோயின் தன்மை அறிதல் அளவீடல் முறைகளின் மதிப்பீடல்.

ஆராய்ச்சி நிலையம் : கி.அ.பெ.விஸ்வநாதன் அரசு மருத்துவக்கல்லூரி திருச்சி.

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நோயாளி இதனை ( ) குறிக்கவும் :

மேலே குறிப்பிட்டுள்ள மருத்துவ ஆய்வின் விவரங்கள் எனக்கு விளக்கப்பட்டது என்னுடைய சந்தேகங்களைக் கேட்கவும், அதற்கான தகுந்த விளக்கங்களை பெறவும் வாய்ப்பளிக்கப்பட்டது. ☐

என்னை இவ்வாய்வில் தன்னிச்சையாகத்தான் பங்கேற்கிறேன். எந்த காரணத்தினாலோ எந்த கட்டத்திலும் எந்த சட்ட சிக்கலுக்கும் உட்படாமல் என்னை இவ்வாய்வில் இருந்து விலக்கிக் கொள்ளலாம் என்றும் அறிந்து கொண்டேன். ☐

இந்த ஆய்வு சம்பந்தமாகவோ, இதை சார்ந்த மேலும் ஆய்வு மேற்கொள்ளும் போதும் இந்த ஆய்வில் பங்குபெறும் மருத்துவர் என்னுடைய மருத்துவ அறிக்கைகளை பார்ப்பதற்கு என் அனுமதி தேவையில்லை என அறிந்து கொள்கிறேன். நான் விலக்கிக் கொண்டாலும் இது பொருந்தும் என அறிகிறேன். ☐

இந்த ஆய்வின் மூலம் கிடைக்கும் தகவல்களையும், பரிசோதனை முடிவுகளையும் மற்றும் சிகிச்சை தொடர்பான தகவல்களையும் மருத்துவர் மேற்கொள்ளும் ஆய்வில் பயன்படுத்திக் கொள்ளவும் அதை பரிசோதிக்க என் முழு மனதுடன் சம்மதிக்கின்றேன். ☐

இந்த ஆய்வின் என்னை நடுத்த முழுமனதுடன் ஒப்புக் கொள்கிறேன். இந்த அறுவை சிகிச்சை மற்றும் அதனால் ஏற்படக் கூடிய பின் விளைவுகள் மற்றும் எதிர்பாராத விளைவுகள் பற்றி எனக்கு விளக்கமாகத் தெரிவிக்கப்பட்டது. ☐

என் நலன் கருதியே இந்த ஆய்வு மேற்கொள்ளப்பட்டது என்று தெரிந்து இந்த ஆய்விற்கு ஒப்புதலிக்கின்றேன். ☐

நோயாளியின் கையொப்பம்.....இடம்.....தேதி .....

கட்டைவிரல்ரேகை(இந்த படிவம் படித்து காட்டப்பட்டு புரிந்த கைரேகை அளிக்கின்றேன்)

ஆய்வாளரின் கையொப்பம்.....இடம்.....நேரம்.....

ஆய்வாளரின் பெயர்.....

PROFORMA

NAME: DOA:

AGE: DOS:

SEX: DOD:

IP NO:

UNIT:

ABDOMINAL PAIN:

SITE:

MIGRATION OF PAIN:

CONTINOUS/INTERMITTENT:

NAUSEA/VOMITING:

FEVER:

ANOREXIA:

DIARRHEA:

PR:

BP:

TEMP(>37.5):

ABODMEN

PAIN:

DISTENSION:

RIF TENDERNESS:

REBOUND TENDERNESS:

RELOCATION OF PAIN:

GUARDING:

BOWEL SOUNDS:

INVESTIGATION:

TC:

DC:

HB:

X.RAY ABDOMEN:

INTRA-OPERATIVE FINDING:

HISTOPATHOLOGICAL EXAMINATION REPORT

MODIFID ALVARDO SCORING SYSTEM

Parameter	Out of	score
MIGRATORY RIF PAIN	1	
ANOREXIA	1	
NAUSEA/VOMITING	1	
RIF TENDERNESS	2	
REBOUND TENDERNESS	1	
PYERXIA(>37.5)	1	
LEUCOCYTOSIS(>10^5)	2	
	10	

OHMANN SCORING:

PARAMETER	**OUT OF**	**SCORE**
RIF TENDERNESS	4.5	
REBOUND TENDERNESS	2.5	
ABSENCE OF URINARY SYMP	2.0	
CONTINUOUS PAIN	2.0	
TC(>10^5)	1.5	
AGE<50 YRS	1.5	
MIGRATION OF PAIN	1.0	
GAURDING	1.0	

ESKELINEN SCORE:

SIGNS AND SYMPTOMS	YES	NO
TENDERNESS	22.82	11.41
RIGIDITY	13.32	6.62
LEUCOCYTE COUNT>10,000	11.76	5.88
REBOUND TENDERNESS	8.50	4.25
PAIN AT RIF	7.02	3.51
DURATION OF PAIN <48 hr	4.26	2.31

MASTER CHART

MODIFIED ALVARADO SCORE

s.no	NAME	AGE/SEX	I.P NO	PAIN	NAUSEA	ANOREXIA	RIF TENDERNESS	REBOUND TENDERNESS	FEVER	LEUCOCYTOSIS	SCORE	HPE
1	RANI	18/F	16554	1	1	1	2	1	1	2	9	AA
2	VELISAMY	18/M	28492	1	1	1	2	1	0	2	6	AA
3	MANIKANDAN	18/F	29996	1	0	0	2	1	0	2	6	AA
4	ASHA	18/F	21074	1	1	1	2	1	1	2	7	AA
5	SALIM	19/M	35458	1	1	1	2	0	1	0	6	NA
6	ARUMUGAM	40/M	35142	1	1	0	2	1	1	2	8	AA
7	VIJAYALAKSHMI	19/F	22008	1	1	1	2	1	1	0	8	AA
8	SUKUMARAN	31/M	36927	1	1	1	2	1	1	2	9	AA
9	MAHENDERAN	17/M	35699	1	1	0	2	1	0	2	6	AA
10	RADHA	13/F	22055	1	1	1	2	1	0	2	9	AA
11	UDHYA KUMAR	45/M	35963	1	1	1	2	1	1	2	9	AA
12	SATHISH	25/M	38282	1	1	1	2	1	0	2	8	AA
13	REVATHI	29/F	24444	1	1	1	2	1	1	2	9	AA
14	BALACHANDRAN	24/M	38745	1	0	1	2	1	1	2	8	NA
15	SARAVANAN	22/M	38543	1	0	0	2	0	1	2	6	NA
16	DEEPA	19/F	25726	1	1	1	2	1	0	2	8	AA
17	RIYAS MOHAMED	14/M	39799	1	1	0	2	1	0	2	7	NA
18	SADIYANDI	60/M	38959	1	1	1	2	1	1	2	9	AA
19	MANJULA	36/F	25140	1	1	1	2	1	0	2	8	AA
20	MUTHUSAMY	65/M	38960	1	1	0	2	1	1	2	8	AA
21	KARTHICK	28/M	41291	1	1	1	2	1	1	0	7	NA
22	DIVYA BHARATHI	18/F	24816	1	1	1	2	0	1	0	6	NA
23	SATHISH KUMAR	22/M	41286	1	1	0	2	1	1	2	8	AA
24	VIJAYALAKSHMI	38/F	27144	1	1	0	2	1	1	2	8	NA
25	AZHAGASAN	30/M	41847	1	1	0	2	1	1	2	8	AA

26	MURUGANATHAM	21/M	43206	1	1	0	2	1	1	0	6	AA
27	JEYANTHI	24/F	27028	1	1	1	2	1	0	2	8	AA
28	RANJITH	20/M	43182	1	1	1	2	1	1	2	9	AA
29	KALISELVI	18/F	28601	1	1	1	2	1	1	2	9	AA
30	RASU	65/M	44966	1	0	1	2	1	1	2	8	AA
31	VIGNESH	20/M	51216	1	1	1	2	0	1	2	8	AA
32	NIVETHA	18/F	28407	1	1	1	2	0	1	2	8	AA
33	PRABAHARAN	20/M	51248	1	1	0	2	1	1	0	6	AA
34	SAHUL HAMEETH	20/M	51589	1	1	1	2	1	1	2	9	AA
35	SELVI	46/F	28632	1	1	1	2	1	1	2	9	AA
36	BALAMURALI	15/M	52330	1	1	1	2	1	1	2	9	AA
37	PANJALI	30/F	29000	1	1	0	2	1	1	2	8	AA
38	KARUPPAIAH	13/M	54286	1	1	1	2	1	0	2	8	AA
39	RAMACHANDRAN	45/M	53925	1	0	1	2	1	1	2	8	AA
40	KALAIYARASI	21/F	32329	1	0	1	2	1	1	0	6	AA
41	KIRUBHAHARAN	13/M	58856	1	1	1	2	0	1	2	8	AA
42	RATINAVEL	16/M	58823	1	1	1	2	1	1	2	9	AA
43	AMBIKA	27/F	32910	1	1	1	2	1	0	2	8	AA
44	GUNASEKARAN	19/M	56188	1	1	1	2	1	1	2	9	AA
45	TRIPURASUNDARI	15/F	33558	1	1	1	2	1	1	2	9	AA
46	BALASUBRAMANI	27/M	57275	1	1	1	2	0	1	2	8	AA
47	ANUSHYA	20/F	34337	1	1	1	2	1	1	2	9	AA
48	MURUGANATHAM	32/M	58224	1	1	0	2	1	1	2	8	AA
49	PRIYADHRSINI	17/F	34673	1	1	1	2	1	1	2	9	AA
50	GUNASELAN	44/M	795	1	1	1	2	1	0	2	8	AA
51	RETCHI JERLIN	19/F	35696	1	0	1	2	1	1	2	8	AA
52	RANJITHKUMAR	17/M	971	1	1	1	2	1	1	2	9	AA
53	HAJIRA BEGAM	39/F	33735	1	0	0	2	1	0	2	6	AA

54	MUTHUSAMY	17/M	9168	1	0	1	2	0	0	2	6	NA
55	SELVI	40/F	36546	1	1	1	2	1	1	2	9	AA
56	PARTHIBAN	31/M	11066	1	1	0	0	0	0	2	4	NA
57	SARATHA	19/F	39336	1	1	0	2	1	0	2	7	AA
58	ANAND	23/M	11335	1	1	0	2	1	0	2	7	AA
59	MUKAYEE	24/F	36568	1	0	1	2	0	1	2	7	NA
60	MARIYADAS	53/M	12276	1	0	1	2	1	1	0	6	AA
61	RAHINI	24/F	29084	1	1	1	2	1	1	2	9	AA
62	MUTHUKUMAR	25/M	14410	1	1	1	2	1	1	2	9	AA
63	NAVEEN	12/M	35929	1	1	1	2	0	1	0	6	AA
64	GEETHA	18/F	39425	1	1	1	2	0	1	2	8	AA
65	ANJALI DEVI	26/F	39419	1	1	0	2	1	1	0	6	NA
66	NALINA	28/F	30928	1	1	1	2	0	1	2	8	AA
67	SUSEELA	32/F	38167	1	0	1	2	0	0	2	6	AA
68	SARAVANAN	18/M	39369	1	1	1	2	1	1	2	9	AA
69	RAJESH	23/M	39425	1	1	1	2	1	0	2	8	AA
70	KUMAR	30/M	41049	1	1	1	2	1	0	0	6	AA
71	PRBHAKARAN	17/M	39410	1	1	1	2	1	1	2	9	AA
72	RAMESH	21/M	38228	1	1	1	0	0	1	0	4	NA
73	ASHOK KUMAR	31/M	38185	1	1	1	2	1	1	2	9	AA
74	DIVYA	22/F	38878	1	1	1	2	0	1	0	6	AA
75	DEEPIKA	13/F	38636	1	1	1	2	1	0	2	8	AA
76	MALIKA	30/F	38830	1	1	1	2	0	1	0	6	NA
77	ANBU	24/M	36528	1	0	1	2	0	0	0	4	NA
78	JOTHI	35/F	36120	1	1	1	2	1	1	2	9	AA
79	VIJAYA KUMAR	22/M	36994	1	0	1	2	0	1	2	7	AA
80	BASKARAN	32/M	37518	1	0	1	2	0	0	2	6	AA
81	GAYATHRI	32/F	39681	1	1	1	2	1	1	2	9	AA

82	PALANISAMY	24/M	39450	1	0	1	2	0	0	2	6	NA
83	RAMYA	17/F	5933	1	0	1	2	0	0	0	4	NA
84	MEENAKSI	27/F	567	1	1	1	2	1	0	0	6	AA
85	PARVATHI	30/F	11162	1	1	1	2	0	1	2	8	AA
86	SURESH	24/M	23698	1	1	1	2	0	1	0	6	NA
87	GAURI	23/F	13574	1	1	0	2	1	0	2	7	AA
88	USHA DEVI	28/F	16772	1	0	1	2	1	0	2	7	AA
89	RAJA	15/M	17758	1	1	1	0	0	1	0	4	NA
90	VIVEK	31/M	37196	1	1	0	2	1	1	0	6	NA
91	REVATHI	26/F	25189	1	1	0	2	1	0	2	7	NA
92	SARATHA	23/F	23210	1	1	1	2	1	1	0	7	NA
93	SHIVARAJ	14/M	18855	1	1	1	0	0	1	0	4	NA
94	CHANDRA	24/F	32195	1	0	1	2	1	1	0	6	AA
95	ASHA	13/F	36102	1	1	0	2	1	1	0	6	AA
96	ARUN	16/M	36582	1	1	1	2	0	1	2	8	AA
97	RUBESH	16/M	36870	1	0	1	2	1	1	0	6	AA
98	MOHAMED YASEEF	28/M	36870	1	1	0	2	0	0	2	6	AA
99	BALASUBRAMANIYAN	42/M	36997	1	1	1	2	1	1	2	9	NA
100	PERUMAYEE	55/M	36602	1	1	1	2	1	0	0	6	AA

OHMANN SCORE

s.no	NAME	AGE/SEX	I.P NO	ABDOMINAL PAIN	CONTINOUS PAIN	AGE<50	RIF TENDERNESS	REBOUND TENDERNESS	LEUCOCYTOSIS	GURADING	ABSENCE OF URINARY SYMPTOMS	SCORE	HPE
1	RANI	33/F	16554	1	2	1.5	4.5	2.5	1.5	1	2	15	AA
2	VELISAMY	39/M	28492	1	2	1.5	4.5	2.5	1.5	0	2	10	AA
3	MANIKANDAN	18/M	29996	1	2	1.5	4.5	2.5	1.5	0	2	11	AA
4	ASHA	40/F	21074	1	2	1.5	4.5	0	1.5	0	2	12	AA
5	SALIM	19/M	35458	1	2	1.5	4.5	0	0	0	2	10	AA
6	ARUMUGAM	45/M	35142	1	2	1.5	4.5	2.5	1.5	1	2	14.5	AA
7	VIJAYALAKSHMI	19/F	22008	1	2	1.5	4.5	2.5	0	0	2	14	AA
8	SUKUMARAN	31/M	36927	1	2	1.5	4.5	2.5	1.5	1	2	15	AA
9	MAHENDERAN	17/M	35699	1	2	1.5	4.5	2.5	1.5	0	2	10	AA
10	RADHA	13/F	22055	1	2	1.5	4.5	2.5	1.5	0	2	13	AA
11	UDHYA KUMAR	45/M	35963	1	2	1.5	4.5	2.5	1.5	0	2	14.5	AA
12	SATHISH	25/M	38282	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
13	REVATHI	29/F	24444	1	2	1.5	4.5	2.5	1.5	1	2	15	AA
14	BALACHANDRAN	24/M	38745	1	2	1.5	4.5	2.5	0	1	2	13.5	NA
15	SARAVANAN	22/M	38543	1	2	1.5	4.5	0	1.5	0	2	9.5	NA
16	DEEPA	19/F	25726	1	2	1.5	4.5	2.5	1.5	0	2	14	AA
17	RIYAS MOHAMED	14/M	39799	1	2	1.5	4.5	2.5	1.5	0	2	14	NA
18	SADIYANDI	60/M	38959	1	2	0	4.5	2.5	1.5	1	2	14.5	AA
19	MANJULA	36/F	25140	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
20	MUTHUSAMY	65/M	38960	1	2	0	4.5	2.5	1.5	0	2	13.5	AA
21	KARTHICK	28/M	41291	1	2	1.5	4.5	2.5	0	1	2	9.5	NA
22	DIVYA BHARATHI	18/F	24816	1	2	1.5	4.5	0	0	0	2	8.5	NA
23	SATHISH KUMAR	22/M	41286	1	2	1.5	4.5	2.5	1.5	0	2	13	AA
24	VIJAYALAKSHMI	38/F	27144	1	2	1.5	4.5	2.5	1.5	0	2	13	NA
25	AZHAGASAN	30/M	41847	1	2	1.5	4.5	2.5	1.5	1	2	16	AA

26	MURUGANATHAM	21/M	43206	1	2	0	4.5	2.5	0	0	2	13.5	AA
27	JEYANTHI	24/F	27028	1	2	1.5	4.5	2.5	1.5	0	2	12	AA
28	RANJITH	20/M	43182	1	2	1.5	4.5	2.5	1.5	1	2	16	AA
29	KALISELVI	18/F	28601	1	2	1.5	4.5	2.5	1.5	1	2	15	AA
30	RASU	65/M	44966	1	2	0	4.5	2.5	1.5	0	2	13.5	AA
31	VIGNESH	20/M	51216	1	2	1.5	4.5	0	1.5	0	2	12	AA
32	NIVETHA	18/F	28407	1	2	1.5	4.5	0	1.5	0	2	11.5	AA
33	PRABAHARAN	20/M	51248	1	2	1.5	4.5	2.5	0	0	2	13.5	AA
34	SAHUL HAMEETH	20/M	51589	1	2	1.5	4.5	2.5	1.5	1	2	15	AA
35	SELVI	46/F	28632	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
36	BALAMURALI	15/M	52330	1	2	1.5	4.5	2.5	1.5	0	2	14	AA
37	PANJALI	30/F	29000	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
38	KARUPPAIAH	13/M	54286	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
39	RAMACHANDRAN	45/M	53925	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
40	KALAIYARASI	21/F	32329	1	2	0	4.5	2.5	0	0	2	10.5	AA
41	KIRUBHAHARAN	13/M	58856	1	0	1.5	4.5	0	1.5	0	2	8	AA
42	RATINAVEL	16/M	58823	1	2	1.5	4.5	2.5	1.5	0	2	13	AA
43	AMBIKA	27/F	32910	1	0	1.5	4.5	2.5	1.5	0	2	13	AA
44	GUNASEKARAN	19/M	56188	1	2	1.5	4.5	2.5	1.5	1	2	14.5	AA
45	TRIPURASUNDARI	15/F	33558	1	2	1.5	4.5	2.5	1.5	1	2	15	AA
46	BALASUBRAMANI	27/M	57275	1	2	1.5	4.5	0	1.5	1	2	13.5	AA
47	ANUSHYA	20/F	34337	1	2	1.5	4.5	2.5	1.5	0	2	13	AA
48	MURUGANATHAM	32/M	58224	1	2	1.5	4.5	2.5	1.5	0	2	11.5	AA
49	PRIYADHRSINI	17/F	34673	1	2	1.5	4.5	2.5	1.5	0	2	15	AA
50	GUNASELAN	44/M	795	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
51	RETCHI JERLIN	19/F	35696	1	2	1.5	4.5	2.5	1.5	1	2	14.5	AA
52	RANJITHKUMAR	17/M	971	1	2	1.5	4.5	2.5	1.5	0	2	13	AA
53	HAJIRA BEGAM	39/F	33735	1	2	1.5	4.5	0	1.5	0	2	10	AA
54	MUTHUSAMY	17/M	9168	1	2	1.5	4.5	0	1.5	0	0	8	NA

55	SELVI	40/F	36546	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
56	PARTHIBAN	31/M	11066	1	2	1.5	0	0	1.5	0	0	8	NA
57	SARATHA	19/F	39336	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
58	ANAND	23/M	11335	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
59	MUKAYEE	24/F	36568	1	2	1.5	4.5	0	1.5	0	2	13.5	NA
60	MARIYADAS	53/M	12276	1	2	0	4.5	2.5	0	0	0	8.5	AA
61	RAHINI	24/F	29084	1	2	1.5	4.5	2.5	1.5	1	2	16	AA
62	MUTHUKUMAR	25/M	14410	1	2	1.5	4.5	2.5	1.5	0	2	15	AA
63	NAVEEN	12/M	35929	1	2	1.5	4.5	0	0	0	2	11	AA
64	GEETHA	18/f	39425	1	2	1.5	4.5	0	1.5	0	2	13.5	AA
65	ANJALI DEVI	26/F	39419	1	2	1.5	4.5	2.5	0	0	2	13.5	NA
66	NALINA	28/F	30928	1	2	1.5	4.5	0	1.5	0	2	12.5	AA
67	SUSEELA	32/F	38167	1	2	1.5	4.5	0	1.5	0	2	12.5	AA
68	SARAVANAN	18/M	39369	1	2	1.5	4.5	2.5	1.5	0	2	11	AA
69	RAJESH	23/M	39425	1	2	1.5	4.5	2.5	1.5	1	2	14	AA
70	KUMAR	30/M	41049	1	2	1.5	4.5	2.5	0	0	2	11.5	AA
71	PRBHAKARAN	17/M	39410	1	2	1.5	4.5	2.5	1.5	0	2	13.5	AA
72	RAMESH	21/M	38228	1	2	1.5	0	0	0	0	0	7.5	NA
73	ASHOK KUMAR	31/M	38185	1	2	1.5	4.5	2.5	1.5	1	2	14.5	AA
74	DIVYA	22/F	38878	1	2	1.5	4.5	0	0	1	2	14.5	AA
75	DEEPIKA	13/F	38636	1	2	1.5	4.5	2.5	1.5	0	2	13	AA
76	MALIKA	30/F	38830	1	2	1.5	4.5	0	0	0	0	7.5	NA
77	ANBU	24/M	36528	1	2	1.5	4.5	0	0	0	0	7.5	NA
78	JOTHI	35/F	36120	1	2	1.5	4.5	2.5	1.5	0	2	13	AA
79	VIJAYA KUMAR	22/M	36994	1	2	1.5	4.5	0	1.5	0	2	13	AA
80	BASKARAN	32/M	37518	1	2	1.5	4.5	0	1.5	0	2	10.5	AA
81	GAYATHRI	32/F	39681	1	2	1.5	4.5	2.5	1.5	0	2	15	AA
82	PALANISAMY	24/M	39450	1	2	1.5	4.5	0	1.5	0	0	8.5	NA
83	RAMYA	17/F	5933	1	2	1.5	4.5	0	0	0	0	7	NA

84	MEENAKSI	27/F	567	1	2	1.5	4.5	2.5	0	1	2	14.5	AA
85	PARVATHI	30/F	11162	1	2	1.5	4.5	0	1.5	0	2	12.5	AA
86	SURESH	24/M	23698	1	2	1.5	4.5	0	0	0	2	10	NA
87	GAURI	23/F	13574	1	2	1.5	4.5	2.5	1.5	0	2	15	AA
88	USHA DEVI	28/F	16772	1	0	1.5	4.5	2.5	1.5	0	2	13	AA
89	RAJA	15/M	17758	1	0	1.5	4.5	2.5	0	0	2	9.5	NA
90	VIVEK	31/M	37196	1	0	1.5	4.5	2.5	0	0	2	11.5	NA
91	REVATHI	26/F	25189	1	2	1.5	4.5	2.5	1.5	0	2	13.5	NA
92	SARATHA	23/F	23210	1	2	1.5	4.5	2.5	0	0	2	13.5	NA
93	SHIVARAJ	14/M	18855	1	2	1.5	0	0	0	0	0	6	NA
94	CHANDRA	24/F	32195	1	2	1.5	4.5	2.5	0	0	2	11	AA
95	ASHA	13/F	36102	1	2	1.5	4.5	2.5	0	0	2	10.5	AA
96	ARUN	16/M	36582	1	2	1.5	4.5	0	1.5	1	2	14.5	AA
97	RUBESH	16/M	36870	1	2	1.5	4.5	2.5	0	0	2	11.5	AA
98	MOHAMED YASEEF	28/M	36870	1	2	1.5	4.5	0	1.5	0	2	11	AA
99	BALASUBRAMANIYAN	42/M	36997	1	2	1.5	4.5	2.5	1.5	0	2	13	NA
100	PERUMAYEE	26/F	36602	1	2	1.5	4.5	2.5	0	0	0	10	AA

ESKELINEN SCORE

s.no	NAME	AGE/SEX	I.P NO	PAIN IN RIF	RIF TENDERNESS	REBOUND TENDERNESS	LEUC OCYTOSIS	RIGIDITY	DURATION OF PAIN	SCORE	HPE
1	RANI	33/F	16554	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
2	VELISAMY	39/M	28492	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
3	MANIKANDAN	18/M	29996	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
4	ASHA	40/F	21074	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
5	SALIM	19/M	35458	7.02	22.82	4.25	5.88	6.62	4.26	50.85	AA
6	ARUMUGAM	45/M	35142	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
7	VIJAYALAKSHMI	19/F	22008	7.02	22.82	8.5	5.88	6.62	4.26	55.1	AA
8	SUKUMARAN	31/M	36927	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
9	MAHENDERAN	17/M	35699	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
10	RADHA	13/F	22055	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
11	UDHYA KUMAR	45/M	35963	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
12	SATHISH	25/M	38282	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
13	REVATHI	29/F	24444	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
14	BALACHANDRAN	24/M	38745	7.02	22.82	8.5	11.76	6.62	4.26	60.98	NA
15	SARAVANAN	22/M	38543	7.02	22.82	4.25	11.76	6.62	2.13	54.6	NA
16	DEEPA	19/F	25726	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
17	RIYAS MOHAMED	14/M	39799	7.02	22.82	8.5	11.76	6.62	4.26	60.98	NA
18	SADIYANDI	60/M	38959	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
19	MANJULA	36/F	25140	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
20	MUTHUSAMY	65/M	38960	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
21	KARTHICK	28/M	41291	7.02	22.82	8.5	5.88	6.62	2.13	52.97	NA
22	DIVYA BHARATHI	18/F	24816	7.02	22.82	4.25	5.88	6.62	2.13	48.72	NA
23	SATHISH KUMAR	22/M	41286	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
24	VIJAYALAKSHMI	38/F	27144	7.02	22.82	8.5	11.76	6.62	4.26	60.98	NA
25	AZHAGASAN	30/M	41847	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA

26	MURUGANATHAM	21/M	43206	7.02	22.82	8.5	5.88	6.62	4.26	55.1	AA
27	JEYANTHI	24/F	27028	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
28	RANJITH	20/M	43182	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
29	KALISELVI	18/F	28601	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
30	RASU	65/M	44966	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
31	VIGNESH	20/M	51216	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
32	NIVETHA	18/F	28407	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
33	PRABAHARAN	20/M	51248	7.02	22.82	8.5	5.88	6.62	4.26	55.1	AA
34	SAHUL HAMEETH	20/M	51589	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
35	SELVI	46/F	28632	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
36	BALAMURALI	15/M	52330	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
37	PANJALI	30/F	29000	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
38	KARUPPAIAH	13/M	54286	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
39	RAMACHANDRAN	45/M	53925	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
40	KALAIYARASI	21/F	32329	7.02	22.82	8.5	5.88	6.62	4.26	55.1	AA
41	KIRUBHAHARAN	13/M	58856	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
42	RATINAVEL	16/M	58823	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
43	AMBIKA	27/F	32910	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
44	GUNASEKARAN	19/M	56188	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
45	TRIPURASUNDARI	15/F	33558	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
46	BALASUBRAMANI	27/M	57275	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
47	ANUSHYA	20/F	34337	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
48	MURUGANATHAM	32/M	58224	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
49	PRIYADHRSINI	17/F	34673	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
50	GUNASELAN	44/M	795	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
51	RETCHI JERLIN	19/F	35696	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
52	RANJITHKUMAR	17/M	971	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
53	HAJIRA BEGAM	39/F	33735	7.02	22.82	8.5	11.76	6.62	2.13	58.85	AA
54	MUTHUSAMY	17/M	9168	7.02	22.82	4.25	11.76	6.62	2.13	54.6	NA

55	SELVI	40/F	36546	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
56	PARTHIBAN	31/M	11066	7.02	11.41	4.25	11.76	6.62	4.26	45.32	NA
57	SARATHA	19/F	39336	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
58	ANAND	23/M	11335	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
59	MUKAYEE	24/F	36568	7.02	22.82	4.25	11.76	6.62	4.26	56.73	NA
60	MARIYADAS	53/M	12276	7.02	22.82	8.5	5.88	6.62	2.13	52.97	AA
61	RAHINI	24/F	29084	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
62	MUTHUKUMAR	25/M	14410	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
63	NAVEEN	12/M	35929	7.02	22.82	4.25	5.88	6.62	2.13	48.72	AA
64	GEETHA	18/	39425	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
65	ANJALI DEVI	26/F	39419	7.02	22.82	8.5	5.88	6.62	4.26	55.1	NA
66	NALINA	28/F	30928	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
67	SUSEELA	32/F	38167	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
68	SARAVANAN	18/M	39369	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
69	RAJESH	23/M	39425	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
70	KUMAR	30/M	41049	7.02	22.82	8.5	5.88	6.62	4.26	55.1	AA
71	PRBHAKARAN	17/M	39410	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
72	RAMESH	21/M	38228	7.02	11.41	4.25	5.88	6.62	2.13	37.31	NA
73	ASHOK KUMAR	31/M	38185	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
74	DIVYA	22/F	38878	7.02	22.82	4.25	5.88	6.62	4.26	50.85	AA
75	DEEPIKA	13/F	38636	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
76	MALIKA	30/F	38830	7.02	22.82	4.25	5.88	6.62	4.26	50.85	NA
77	ANBU	24/M	36528	7.02	22.82	4.25	5.88	6.62	2.13	48.72	NA
78	JOTHI	35/F	36120	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
79	VIJAYA KUMAR	22/M	36994	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
80	BASKARAN	32/M	37518	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
81	GAYATHRI	32/F	39681	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
82	PALANISAMY	24/M	39450	7.02	22.82	4.25	11.76	6.62	4.26	56.73	NA
83	RAMYA	17/F	5933	7.02	22.82	4.25	5.88	6.62	2.13	48.72	NA

84	MEENAKSI	27/F	567	7.02	22.82	8.5	5.88	6.62	2.13	52.97	AA
85	PARVATHI	30/F	11162	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
86	SURESH	24/M	23698	7.02	22.82	4.25	5.88	6.62	4.26	50.85	NA
87	GAURI	23/F	13574	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
88	USHA DEVI	28/F	16772	7.02	22.82	8.5	11.76	6.62	4.26	60.98	AA
89	RAJA	15/M	17758	7.02	11.41	4.25	5.88	6.62	2.13	37.31	NA
90	VIVEK	31/M	37196	7.02	22.82	8.5	5.88	6.62	4.26	55.1	NA
91	REVATHI	26/F	25189	7.02	22.82	8.5	11.76	6.62	4.26	60.98	NA
92	SARATHA	23/F	23210	7.02	22.82	8.5	5.88	6.62	4.26	55.1	NA
93	SHIVARAJ	14/M	18855	7.02	11.41	4.25	5.88	6.62	2.13	37.31	NA
94	CHANDRA	24/F	32195	7.02	22.82	8.5	5.88	6.62	4.26	55.1	AA
95	ASHA	13/F	36102	7.02	22.82	8.5	5.88	6.62	4.26	55.1	AA
96	ARUN	16/M	36582	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
97	RUBESH	16/M	36870	7.02	22.82	4.25	5.88	6.62	4.26	50.85	AA
98	MOHAMED YASEEF	28/M	36870	7.02	22.82	4.25	11.76	6.62	4.26	56.73	AA
99	BALASUBRAMANIYAN	42/M	36997	7.02	22.82	8.5	11.76	6.62	4.26	60.98	NA
100	PERUMAYEE	26/F	36602	7.02	22.82	8.5	5.88	6.62	4.26	55.1	AA

KEY TO MASTER CHART

AA → ACUTE APPENDICITIS

ACA → ACUTE CATARRHAL APPENDICITIS

AGA → ACUTE GANGRENOUS APPENDICITIS

APA → ACUTE PERFORATIVE APPENDICITIS

AR → ABDOMINAL RIGIDITY

ASA → ACUTE SUPPURATIVE APPENDICITIS

B.M → BURNING MICTURITIION

C → CONSTIPATION

DIA → DIARRHOEA

MG → MUSCLE GUARDING

MIRF → MASS IN RIGHT ILIAC FOSSA

ML → MESENTERIC LYMPHADENITIS

N → NORMAL

OS → OBTURATOR SIGN

PID → PELVIC INFLAMMATORY DISEASE

PS → PSOAS SIGN

RE/T → REBOUND TENDERNESS

RIF/T → RIGHT ILIAC FOSSA TENDERNESS

RS → ROVSING'S SIGN

W. I → WOUND INFECTION